THE OIL WEEKLY

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The Oil Man's Calendar

SEPT.	
16–18	National Petroleum Association, Atlantic City, N. J.
OCT.	
2	AIME Regional Meeting, St. Louis.
5– 9	National Safety Congress and Exposition, Chicago.
8–10	Texas Mid-Continent Oil and Gas Association, Dallas, Texas.
12–14	American Society of Mechanical Engineers, Rochester, New York.
12–17	AIME, Petroleum Division, Los Angeles.
19	National Stripper Well Association, Wichita, Kansas.
19–21	Independent Petroleum Association, Wichita, Kansas.
29–31	AIME, Petroleum Division, Austin, Texas.
30–31	Illinois Mineral Industries Conference, Urbana.
NOV.	
5– 6	American Association of Petroleum Geologists, Los Angeles.
6	California Natural Gasoline Association, Los Angeles.
9–13	American Petroleum Institute, Stevens Hotel, Chicago.
16–18	American Institute of Chemical Engineers, Netherlands Plaza Hotel, Cincinnati.
17–21	National Chemical Exposition, and Industrial Conference, American Chemical Society, Chicago.

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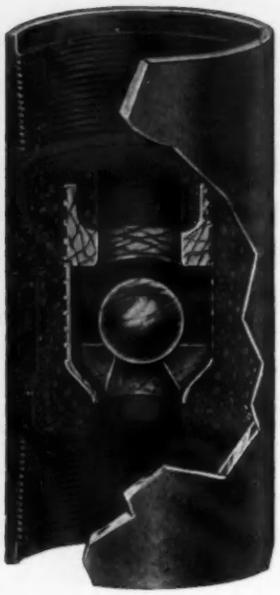

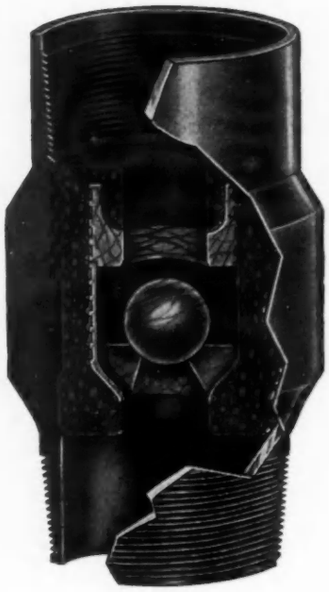

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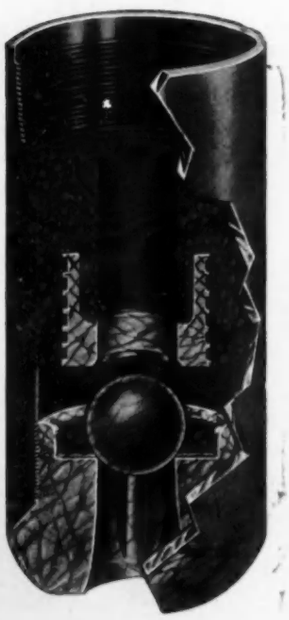
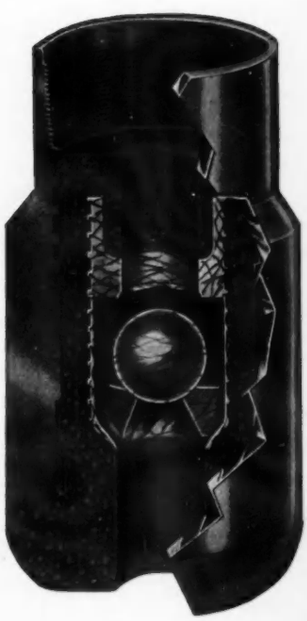




The Changing Panorama

Better Outlook for Rubber Encouraging

THE decidedly more optimistic tone of the rubber supply question during the past two weeks is very encouraging. Both the rubber and petroleum industries during this period commenced to hold some ray of hope that new short-cuts, adjustments and "quickie" processes would provide a larger supply than therefore anticipated, perhaps even enough to partially meet civilian needs.

While a "miracle rubber" for all needs admittedly was still a "bird in the bush," the more optimistic viewpoint lends encouragement that by the time rubber begins to force a large part of the automobiles from the roads that some methods or means will have been found to meet the situation. Then the war effort and the national economy can proceed without the severe hardships coming to every business endeavor, man, woman and child that would result from curtailed automobile travel facilities. Then the oil industry can move forward to supply all the aviation gasoline, fuel oil, etc., neeeded for military purposes without fear that surplus motor gasoline will result from increased refinery operations.

Rubber Supply More Vital Than Source

THE paramount economic interest of the petroleum industry in the current synthetic rubber controversy is to have an adequate supply made available for both military and civilian purposes. Whether that rubber originates from oil or from grain alcohol is of little commercial interest to the oil industry, when all fatcors are considered.

The petroleum industry's very existence is still primarily dependent on a large consumption of gasoline, which in turn is dependent on an adequate supply of rubber so the 30 million motorists can continue to drive their cars. Despite Eastern rationing and nation-wide tire conservation efforts, plus enlarged use of fuel oils, aviation gasoline, etc., motor gasoline still constitutes almost 40 percent of the petroleum products made.

The plants being constructed to make synthetic rubber from petroleum actually will not produce the real rubber product—merely butadiene or buytl, ingredients that will comprise only 10 cents of each $1 worth of synthetic rubber. The program calling for construction of 700,000 tons of petroleum-base synthetic rubber by 1944 will require less than 1 percent of the oil industry's daily petroleum volume. Meanwhile, oil companies, it is estimated, will lose sale of $15 to $20 worth of products for every $1 worth of rubber burned up on the roads.

That would be a poor trade, and explains why such companies as Standard Oil Company (New Jersey) and Socony-Vacuum assert they are interested only in getting the most rubber in the shortest time, from any raw materials whatsoever. Also, this shows why they are sincere in making such statements.

Patent Law Changes Would Be Dangerous

FROM both the Department of Justice and legislative circles are coming charges implying that the United States patent system is hindering the war effort and that the nation as a whole would benefit if some of the rights of patentee's were done away with. Contrary to such charges, the reverse is true.

The present American system is to consider a patent a property, which can be sold or leased. A man having worked and perfected a method or device is given 17 years in which to benefit from his labor. As a result the United States is not only the most inventive nation of the world, but also the master of mass production. Therefore, products are more plentiful, cheaper rather than higher, and the American standard of living is far above the rest of the world.

Current efforts to change the principles of the American patent system no doubt are due to charges that patents have been withheld or used to purposely delay development, and thereby hindered the nation's war effort. The United States government can take over patents, as it can such real property as industrial plants, in event of war. It already has done this in a number of instances in the current war.

Advocates of patent law changes like to hold up the much publicized deal between Standard Oil of New Jersey and the German Farbenindustrie as an example in which war preparations have been delayed by patents. Hitler probably has an entirely different view, for every enemy bomber is using a fuel originally conceived in his country and also drops a bomb in which the explosive ingredient is likely to be of German origin. Moreover, one of the big emergencies confronting the country, a rubber supply, may be solved by these German patents. Yes, Hitler probably wishes his Farbenindustrie had never made that deal with Standard Oil.

Some of the proposals suggested by Congressmen would go so far as to have patents become common property immediately, while others place limits of three years or so in which he could reap benefits. No changes should be made that would destroy the incentive to find a better and cheaper product, convert it into property through a patent, then make it in quantity and consequently reduce the price so as to procure a larger market and gain profit. The denial of these rights would result in fewer patents, destroy mass production and cause higher costs, and thereby lower standards of living, not to mention destruction of big industrial plants that today are expected to produce the military implements that will defeat Hitler and his Axis partners.

Flying Freighters To Replace Boats?

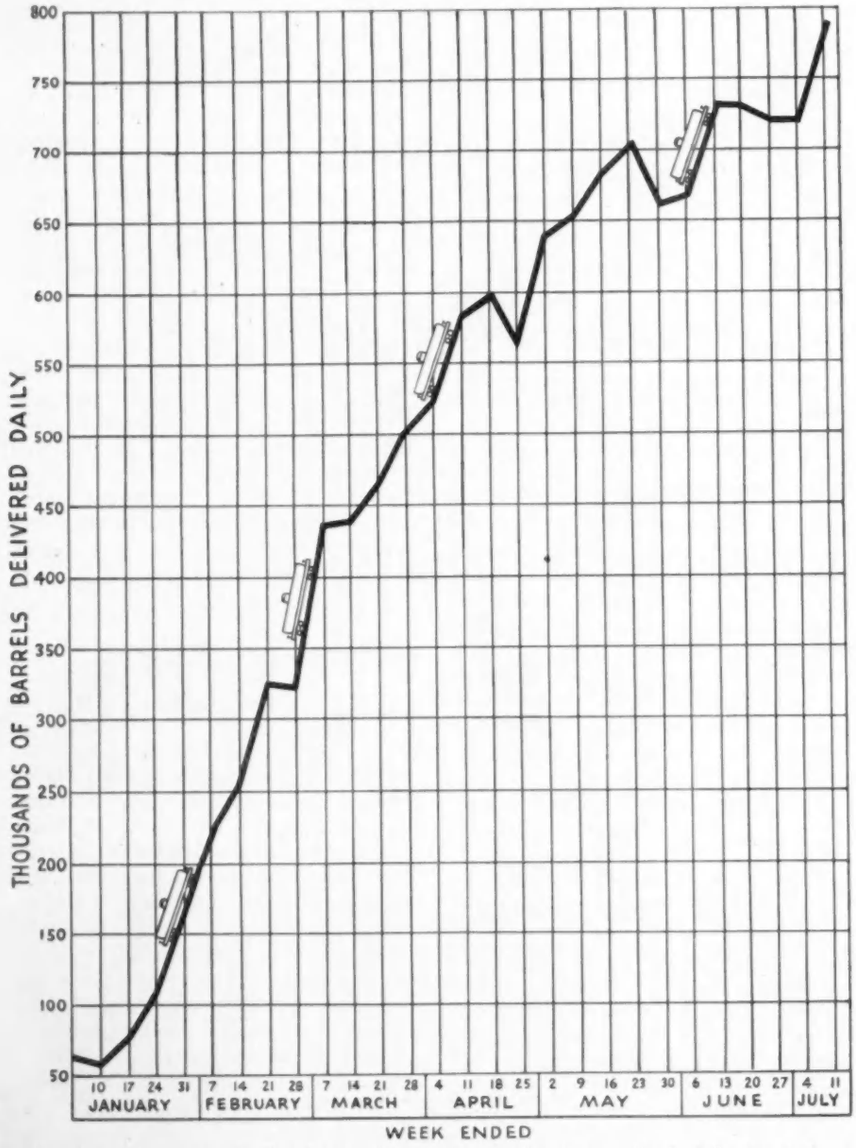
THE proposal that the United States immediately convert nine of its major shipyards to mass production of 70-ton freighter airplanes—to solve the submarine blockade, eliminate the difficulties involving shipping time and distances, reduce steel requirements, and with the same step prepare itself to quickly move an entire army to any part of the world where it might be needed—would have far-reaching influence on the petroleum industry if carried out.

Construction of these big flying boats at the rate of 5000 a year would materially alter the relationship of the industry's product requirements. Whereas the industry has been anticipating further rapid expansion of fuel-oil consumption as the present boat program progressed, and worrying about filling the prospective demand, the suggested switch in plans would create an unexpected additional growth in use of aviation gasoline instead. Many addi-

tional aviation-gasoline plants would have to be built, and not much time would be available if the yards could be in full production within 10 months, as predicted.

Despite its revolutionary nature, the proposal is apt to receive respectful attention. Besides its possible advantages, the fact that it was suggested by "miracle shipbuilder" Henry J. Kaiser adds to its possibilities. His reputation for doing big things in a short time is almost legendary, and his opinions draw considerable water in both political and engineering circles. Entering the shipbuilding business less than two years ago, he has broken every ship construction record in history. Kaiser is building cargo boats in 46 days, in contrast with 212 days for the last war, and expects to halve his present mark by fall. Washington holds him up as an example to all other industries, especially ship builders. He constructed Boulder, Bonneville and Grand Coulee dams in record time, and once contracted to furnish a huge quantity of cement far below prices of other bidders when he did not even have a cement plant. He proceeded to build the world's largest cement plant, and delivered the cement much faster than it could be mixed and poured. It became known a few weeks ago that Kaiser was studying aircraft production, when he intimated plans were under way for conversion of some of his shipyards to freight-plane construction after the war.

Tank Car Deliveries of Oil to East Coast Near 800,000 Barrels Daily



Were it not for an amazing increase in the use of railroad tank cars, the East Coast petroleum supply situation would indeed be severe.

Since the first of the year daily average deliveries have jumped from less than 100,000 barrels to almost 800,000 barrels. During the week ended July 11 shipments were at the all-time peak of 788,500 barrels, and this period also marked the first four week duration in which shipments had been maintained above 700,000 barrels per day.

The number of tank cars now in Eastern service is estimated at 62,000, or about half the petroleum railroad cars in existence. This compares with approximately 5000 such cars used in carrying supplies to the East Coast the first of the year.

Additional material increase is not to be expected, the thought persisting that about 800,000 barrels per day is the maximum delivery rate that can be obtained by railroad facilities.

Production Growth Very Favorable

ENCOURAGING indeed is the steady improvement in the production picture during the past few months, and especially the prospects for August. Due to drastic curtailment in the early months of the year, United States production fell from 4,137,483 barrels per day in January to 3,501,215 barrels daily in April, but OPC is recommending an output of 4,038,500 barrels per day for August. Thus the nation's output of crude oil may again return to above 4 million barrels daily next month.

The increase is made possible because of expansion of overland oil transportation facilities between Texas and the East Coast, and probably will mean enlarged runs to refinery stills in these areas. This should result in the manufacture of sufficient quantities of both distillate and residual fuel to permit some building of these currently low stocks, and thus better prepare the industry for meeting winter demands for these products. The acute fuel-oil situation in California should be improved also, an increased output of 27,700 barrels over July was recommended to provide adequate supply of fuel oil for military and essential needs.

However, the situation is not without some worrisome problems. If the anticipated material increase of refinery runs follows the gain in production, it is possible that the highly desirable reduction of gasoline stocks may be disrupted. Refiners should exercise great care and adjust product yields to obtain as much additional fuel oil and as little gasoline as possible. If they are able to do this, there will be material all-round improvement in the industry's position and outlook.

WASHINGTON ROUNDUP

By B. F. LINZ
Washington Correspondent

»

Senate Asked to Eliminate Oil Depletion Allowance

»

Large House Group Is Opposed to Nation-Wide Rationing

»

Independent Association Files Protest Against Subsidies

»

Rubber Scrap Drive Brings in 454,000 Tons

ANNOUNCEMENT by PIWC Chairman Boyd that the oil industry had collected 980,000,000 pounds—454,000 tons—of scrap rubber in its all-out 25-day salvage drive, eliciting praise from high administration officials for the industry's latest contribution to the war, featured a week in which rubber continued to be the outstanding subject of consideration in the national capital.

The drive not only will add to the stockpile enough scrap to keep the reclaiming plants busy for many months to come but will provide well over $2,000,000 for the work of the Army and Navy relief societies and the Red Cross.

Other developments of the week were the publication by the Rubber Manufacturers Association of a plan to keep the nation's automobiles shod with a negligible amount of natural crude rubber, some reclaimed and a considerable quantity of Thiokol and butyl, and passage by Congress of the Gillette bill to establish an independent agency to further the production of synthetic rubber from agricultural products. [See Page 129.]

The Gillete bill, opposed by administration leaders, was passed by the Senate with all members on the floor voting aye, but majority leader Barkley was confident that it would be vetoed by President Roosevelt because of a provision making mandatory the granting of priorities by WPB for materials required for construction of plants.

Taxes also came to the fore during the week, as the House passed a $6,300,000,000 revenue bill and Secretary of the Treasury Morgenthau urged the Senate finance committee to increase the take to $8,700,000,000, of which $200,000,000 could be secured by suppression of the "highly privileged" oil operators through elimination of the 27½ percent depletion allowance.

Oil production will continue on the up-grade, Coordinator Ickes setting a figure of 4,308,500 barrels a day as the goal for August, the increase of 195,700 barrels over the current recommendation being the third to be recommended in as many months. [See Page 133.]

Rail deliveries of oil to the East Coast during the week ended July 18 dropped 39,480 barrels a day from the preceding week, to an average of 749,070 barrels daily, according to the weekly OPC report. The decline was attributed to the fact that many of the cars which were loaded in the preceding week had not yet reached their western destinations for reloading.

Use, sale or manufacture of lubricating oil cans made of any metal will be prohibited after September 30, under orders just issued by WPB. Until that date, however, manufacturers will be permitted to use inventories of terneplate produced prior to February 11, last, for one and five-quart and larger cans. WPB officials said it is expected that a new method of distributing lubricating oil will have been developed by the final date on which terneplate containers can be used.

☆

TAX HEARINGS: Renewing all of the Treasury's original tax recommendations, including the attack on the depletion provisions, Secretary Morgenthau told the Senate finance committee July 23 that the $6,300,000,000 revenue bill passed by the House should be increased to at least $8,700,000,000.

Appearing as the first witness before the committee as it opened hearings on the legislation, Morgenthau said that revenues could be materially increased by elimination of the tax exemption for state and municipal bonds, a requirement for the filing of joint returns by married couples, and the outlawing of "special privileges."

Percentage depletion, he told the committee, is a "serious breach in our system of taxation according to ability to pay," and the owners of oil wells and mines are a "highly privileged group having large amounts of income exempt from income tax."

"I cannot believe that the taxpayers of America would knowingly sanction a provision of the law which allows owners of oil and gas wells to deduct from their income 27½ percent of their gross receipts from such wells—not for one year, two years, or the period necessary to return investment, but for an unlimited period," Morgenthau said. "For example, a leading oil company owned a number of oil properties which had cost it $3,000,000. At the time the case was examined percentage depletion of $3,600,000 had already been allowed and the properties still had three fourths of the oil left.

"Certainly we cannot justify this exemption on the ground that it encourages exploration and drilling for oil. There is grave doubt that it has substantial effect on oil discovery. It would have cost the federal government about one third as much to have paid all the cost of every wildcat well that was drilled in 1941 as to have allowed percentage depletion and the associated intangible drilling expenses. The annual cost of these allowances under the proposed rates would be about $200,000,000."

Morgenthau urged still stiffer taxes on individual income, but admitted that even under the House rates nearly 7,000,000 persons who have never before paid direct federal taxes will be required to file returns and will bring the number of reports to be submitted in 1943 to 31,000,000 as against only 7,700,000 in 1940.

Excess profits taxes, he said, should be high enough to take the profit out of war, but not so high as to encourage extravagance and waste in the conduct of business. To this end, he approved the 90-percent rate adopted by the House, but recommended it be coupled with a 10-percent credit for return to the corporations after the war, to help in the economic adjustment which then will be necessary.

The only House levy criticized by the

Treasury head was the proposed five-percent tax on freight and express shipments, which he said directly threatens the stability of prices and would make it impossible in many cases for businesses to continue to operate under the price ceilings which have been imposed.

☆

SCRAP RUBBER DRIVE: Collection by the oil industry of 908,310,000 pounds (454,155 tons) of scrap rubber during its campaign from June 15 to July 10 was reported to President Roosevelt July 21 by William R. Boyd, chairman of the Petroleum Industry War Council. This figure represents only the amount of rubber actually moved to bulk station plants and weighed, and will be increased by numerous scattered small piles collected at filling stations not yet weighed and collected at bulk stations.

President Roosevelt released the figures at a press conference, in which he said the country will "hear something" regarding rubber within the next two weeks, possibly from the White House, but refused to elaborate further.

The large addition to the rubber stock pile — considerably in excess of the amount many government officials predicted would be collected—brought general commendation to the industry from President Roosevelt, Coordinator Ickes, WPB Chairman Donald M. Nelson and Rubber Coordinator Arthur B. Newhall.

Boyd, himself jubilant over the results, pointed out the campaign collected "approximately 4.2 percent of all the rubber imported into this country from 1826 through 1940 according to the Statistical Abstract of the Department of Commerce, which gives a figure of 19,868,371 tons imported for that period of 115 years."

Accompanying Boyd's report were tables showing collections and the per capita contribution in each state. Nevada led in the per capita contribution, with 30.13 pounds per person, while California contributed by far the greatest total amount, 40,247 tons. For the nation as a whole, 6.87 pounds of rubber per person was collected.

☆

SPECIAL REQUIREMENTS PLAN: Work is being pushed in both OPC and WPB on the new special requirements plan which is scheduled to supersede Preference Rating Order P-98 when it expires at the end of this month, as well as on a number of orders which must accompany it to bring other regulations into conformity.

The SRP is designed to bring the oil industry within the general scope of the production requirements plan now applied to the metal needs of nearly all industries. SRP, however, is not adequate to the particular needs of the oil industry because of the fact that it provides that applicants shall estimate their needs for a three months period, which is not possible in oil operations the scope of which might change overnight.

☆

TRANSPORTATION: Forty-eight state and 13 regional committees, composed of representatives of the petroleum transport industry and oil companies, have been established under the Petroleum Carriers Section of the Motor Transport Division of the Office of Defense Transportation and are playing an increasingly important part in stepping up the movement of products in the East Coast area, it was announced July 23 by Director Joseph B. Eastman.

The principal function of the committees, it was said, is to assist in the diversion of oil and products from tank cars to trucks in hauls of less than 100 miles, and in the last three weeks at least 1000 cars have been released in this way for long-haul service.

Heretofore, the drive to divert short-haul shipments to trucks through the advisory committee set-up has been confined mainly to the eastern half of the country, but committees in western states are expected to start functioning actively in the next few weeks, it was stated.

☆

TANKER RATES: Definite rates for tanker transportation, under voyage charter, of gasoline and kerosine from the Gulf, Aruba and Curacao (NEI) and Caripito (Venezuela) to Puerto Rico and the Virgin Islands were announced by the War Shipping Administration July 20, to be effective with respect to loadings completed on and after June 25.

Rates from the Gulf range from 37.5 to 43 cents per barrel from one United States Gulf port to various Puerto Rican destinations and are fixed at 38.5 cents to St. Thomas, V.I. Rates from Aruba and Curacao to Puerto Rico range from 16 to 21 cetns, with a rate of 16.5 cents to St. Thomas, and from Caripito, rates range from 20.5 to 26 cents to Puerto Rico and 20 cents to the Virgin Islands. The 25-percent surcharge previously authorized is made applicable to the new rates.

INVESTIGATION: Another investigation of the gasoline and rubber situation is to be piled on top of all the similar investigations that have gone before.

At the request of Majority Floor Leader McCormack, Representative William J. Fitzgerald of Connecticut announced July 22, an unofficial committee of 10 members from the New England States would probe the gasoline, fuel oil and rubber situation to clear up confusion concerning supplies and needs.

It was said that hearings might begin this week, with representatives of government and industry called before the group.

The New England delegation has been anxious for some time to make a study of the oil and rubber situation, but Senator Maloney of Connecticut, who made such an investigation some months ago, was unable to secure funds for his special committee to revive its work.

☆

PIPE LINES: Although some work contemplated by the OPC pipe line relocation program (see THE OIL WEEKLY, July 13) is being held up for various reasons, work on most of the projects is moving along fast, and several will be completed during the next few months, it was revealed by J. R. Parten, OPC director of transportation, July 21 in a progress report to Representative Pehr C. Holmes of Massachusetts.

Doubt as to its value is holding up the decision on extension of the Plantation line from Greensboro, N. C., to Norfolk, Va., but right-of-way is being bought and pipe prepared for construction of an extension from Baton Rouge to Houston-Beaumont refining center. Likewise, plans for enlargement of present Plantation system between Baton Rouge and Greensboro is proceeding satisfactorily.

The proposal to construct a product line from East Texas to Paducah, using new 16-inch pipe, has been rejected because of the use of critical materials. Also, the use of second-hand 14-inch gas line pipe for this purpose has been found impracticable because of shortages of proper grades. Currently, a plan to terminate the line at Memphis instead of Paducah, using second-hand 10- or 12-inch pipe, is being studied.

Uncertainty as to the supply position at Buffalo is slowing up the proposal to increase Great Lake tanker movement.

Objections have been raised by the Department of Justice to the plan for reversal of several lines between Port

Arthur and El Dorado, Ark., and construction of a new second-hand material pipe line from El Dorado to Helena, Arkansas, but no delay is anticipated, and work of buying right-of-way, removing pipe from original site, etc., is progressing. Actual laying of pipe will start about August 1, and due to be finished within 3 months.

Plans for increasing the crude movement north and east from Texas, which involves a number of individual projects, is progressing according to schedule. It includes the installation of new stations, laying of salvaged line from Dallas to Stuart, Oklahoma, reversal and conversion of Tuscarora gasoline line, and considerable looping of various systems.

Sun-Susquehanna pipe line is being reversed and Shell is enlarging its products line from Zionville, Indiana, to Lima, Ohio. Products delivered to Toledo will be moved by lake barges to Cleveland terminal of Sun-Susquehanna if found feasible, and until this study is completed building of products line from Fostoria to Akron to tie Shell and Sun systems together is being held in abeyance.

Due to approval for construction of 24-inch line from East Texas to Southern Illinois, plans for a 20-inch line along this route is being held up. Work is progressing on 24-inch crude line.

Progress on building of pipe line across Florida has been confined to clearing up details in the agreement.

☆

PIPE LINE CONTRACT: Not one cent of profit, directly or indirectly, will accrue to the companies comprising War Emergency Pipelines, Inc., from the construction of the "big-inch" pipe line, under the terms of the contract through which Defense Plant Corporation will finance the $35,000,000 project.

Text of the agreement was made public last week, following approval by Deputy Coordinator Davies of the plan for construction submitted by W. Alton Jones, chairman of the temporary joint pipe line managing subcommittee under OPC recommendation No. 49.

All work incident to the survey, laying out, procurement and construction of the line is to be performed by the corporation, under the contract with Defense Plant Corporation, and the latter is to be sole owner of the entire property, advancing such funds as may be necessary as the project progresses.

The industry corporation agrees that it will not engage in or conduct any business whatsoever other than acting for the government under and pursuant to the provisions of the agreement, and further agrees that "it will act hereunder without any charge or fee whatsoever, and without profit to itself; and that no dividends or profit shall accrue, directly or indirectly, to its stockholders by reason of the performance of this contract."

The RFC subsidiary agreed to expend up to $35,000,000 on construction of the line.

The contract carries a provision that upon completion of the project the pipe line corporation will operate it under terms and conditions to be negotiated between it and Defense Plant Corporation during the course of construction.

The contract contains a clause that the agreement may be canceled by the government on 10 days written notice.

☆

RATIONING: Millions of East Coast motorists drained filling station tanks dry July 21 as 17 states and the District of Columbia prepared to go under the

[*Continued on page 131*]

House Group Wants Civilian Rubber and Opposes Ration Spread

CALLING for the halting of "scarce" tactics, 137 members of the House of Representatives last week expressed opposition to nation-wide gasoline rationing and called upon the Administration to supply such small quantities of rubber as may be needed to keep automobiles on the road.

Their views were presented to the House in a report prepared by Congressman Clarence F. Lea of California, chairman of the Interstate and Foreign Commerce Committee, following a meeting of the group to consider the gasoline-rubber situation and a conference with President Roosevelt on rationing by Representatives Lea, Kleberg of Texas and Holmes of Massachusetts.

In its report, the group asserted that there is no need of general rationing to conserve gasoline and its adoption as a means of conserving rubber is "properly a matter of deep concern to the country."

The committee found that, as of July 1, we had about 600,000 tons of crude rubber in stock, together with over 800,000 tons of rubber in its first use in tires and tubes on automobiles and in stock, with a program for synthetic which, with small imports, will aggregate 1,100,000 tons before the end of 1944.

The aggregate amount of the first-use rubber by December 31, 1944, would be 2,600,000 tons and the possible reclaimable value of rubber within that period would be over 2,000,000 tons.

"We feel warranted in saying, with confidence, that synthetic rubber of a quality comparable to standard rubber can be produced; that we have an abundance of materials from which it can be made," the report declared. "The only doubt is as to the time in which we will have quantity production. The estimated production under the government program would reach an 800,000-ton capacity in the early part of 1944.

"Synthetic plants, outside of the government program, give promise of substantially adding to our quantity of rubber during the remainder of this year and 1943.

"Under these circumstances, we believe gasoline rationing, as a means of conserving rubber, is now unwarranted."

However, the group added, rubber restrictions are imperative and call for conservation of tires now in use.

"Gasoline rationing, where there is a shortage of transportation or of its supply, is a logical and acceptable thing to be done," the report continued. "Gas rationing, where there is an adequate supply of gasoline, carries a stigma of unwarranted use of power.

"A very considerable number of our refineries are overstocked with gasoline at the present time," it was explained. "The economic production of different grades of oil and gasoline requires a certain quantity balance to maintain efficiency of production. If the market will not take the proper proportion of gasoline, it must be either wasted, stored in artificial containers, or pumped back into the earth for storage. With the present demands for fuel and refined oils, the most economic methods of production would supply adequately the total gasoline needs of the nation.

"However, many sacrifices the people of the nation may be called upon to make will be acceptable whenever they are convinced such restrictions are necessary. We should impose restrictions only to the extent necessary to serve the needs of the nation. The burdens and handicaps of restrictions should be compared with their possible benefits."

Convinced that the rubber situation will permit the diversion of enough material to keep automobiles equipped with tires, the group specifically recommended that:

"Every effective step be taken to furnish proper transportation of gasoline and oil products to the Eastern ra-

tioned area at the earliest possible moment.

"The government bend every energy toward obtaining a rapid and efficient production of synthetic rubber by any and all practical means.

"Additional small plants for the reclaiming of rubber be established, with government aid if necessary, throughout the various sections of the country so that every available bit of rubber scrap may be effectively used.

"A portion of such reclaimed rubber, together with the small amount of crude rubber needed, be allocated for the retreading of tires for essential civilian use.

"Government officials refrain from threatening seizure of privately owned tires, and that assurances be given American motorists that they will be permitted to retain, subject to penalties for violation of restrictions on use, five tires for each car.

"Legislation be enacted or orders be made effective for the limitation of motor-vehicle speed to 35 or 40 miles per hour, with appropriate punishment for excessive speed or other unwarranted waste and misuse of tires and the rubber therein.

"And, finally, that gasoline rationing except in areas where transportation facilities are temporarily inadequate, is unnecessary, unwise, and economically unsound."

Independent Group Strongly Opposes a War Subsidy Corporation

ASSAILING "strip tease formulas that have promised much that is never realized" by independent oil men in need of relief, Russell B. Brown, general counsel of Independent Petroleum Association of America, last week filed a brief with the House banking and currency committee strongly opposing enactment of the Connally-Steagall bill for creation of a War Petroleum Corporation.

Brown filed with the committee a resolution of the association, holding that independent producers would be neither aided nor harmed by the measure but taking the position that transportation and refining cost increases should be met by price increases rather than subsidies, and contending that the measure gives the proposed corporation too broad a field of operation.

The lending powers to be vested in the corporation, Brown asserted in his brief, already are held by the Reconstruction Finance Corporation and would merely make for a duplication of agencies.

Similarly, he said, the authority to be given the corporation to purchase petroleum at higher than maximum prices would only parallel the power of the Office of Price Administration to achieve the same results by increasing permissible maximum prices.

"This provision," he said further, "gives only partial relief to the producers. Their difficulties arise from situations that go beyond the dislocations occasioned by the orders of the petroleum coordinator. If full benefit of the contributions of the petroleum industry to the war effort is to be obtained, it is necessary to go far beyond the provisions now contained in this bill.

"Powers previously delegated to the price administrator under legislation establishing that agency should be used to approve and establish appropriate maximum prices on crude oil and its products."

Brown asserted that efforts of the producers to secure higher prices through petitions to OPC and OPA brought nothing more satisfactory than formal acknowledgment of the receipt of their letters, and that Administrator Leon Henderson had admitted before a House appropriations subcommittee that he had never studied production costs and Coordinator Ickes had told a House interstate and foreign commerce subcommittee that OPC had never gone into the price of production.

Much of the difficulties of the independent producer, he intimated, is due to the fact that while there are a number of independent representatives among the advisors to the coordinator, "the fact remains that the larger part of the advisers selected by him come from the ranks of the larger companies.

"It may be that was necessary and desirable. Certainly this is true. The men composing this organization, so far as I know, are without exception sincere, capable and honest. We recognize, however, that they must view their activity in the light of the experience from which they come.

"The larger companies are to a great extent the purchasers of our product. Their interest is often opposed to ours. Without necessarily intending to do so, they subordinate our problems to those with which they are more intimately acquainted and by which they are more directly affected. * * * Therefore, as much as the independent needs relief and as sincerely as Congress may feel on this important subject, and as important as the subject is to the welfare of the entire nation, we feel that it would be illusory to hope or to expect relief when the entire responsibility is placed in the hands of an agency so surrounded without any direction or formula upon which we may depend for the relief as a matter of right."

Accordingly, he held, with the bill providing all of its benefits through what is in effect a subsidy the independent association believes that most of those benefits never actually would be received.

Other provisions of the bill, Brown stated, give the corporation full and complete power to explore for, produce, refine, transport and sell oil products—"a complete delegation of power" to the corporation "to operate the entire petroleum industry, with no limitation or standards."

"The independent in the petroleum industry has faced one emergency after another," he told the committee. "We have chased the phantoms of relief so long that our palms are sore from clenching emptiness. We have been gentled and jostled into general admission seats in our industrial theater galleries where through a stale smoke haze we have been treated to strip tease formulas that have promised much that is never realized. We get all in a dither over something that is to be done for us only to awake convalescing from something that has been done to us.

"The petroleum coordinator has very properly expressed concern about the present situation with regard to many in the petroleum industry. He has told this committee the purposes he proposes to effect by this measure. He has said to you, in effect, that the choice of language and remedies were not his. That if better methods could be offered they would be acceptable to him.

"Our position is that existing agencies of the federal government in the performance of their normal functions can serve all the legitimate purposes of proposers of the War Petroleum Corporation bills. If these agencies are not acting to relieve the petroleum industry from war-inspired and other handicaps, the matter would seem in the first instance at least to be an administrative problem calling for a change in the attitude of the executive branch of government. However, if Congress believes that one or more of these agencies either is unable or unwilling to take the necessary action, then the present bill might be re-drafted to include clearly defined standards and limitations on the exercise of any extraordinary powers granted by the bill."

International Oil Fronts

By JACK LOGAN, Associate Editor, and JACK V. HIGHTOWER, Foreign Editor

IN ITS capacity as custodian of an essential resource, and in its position as a world-scale enterprise, the oil industry has been confronted with the realities of war, as have comparatively few others.

It has seen profitable markets vanish. It has witnessed the destruction of refineries, wells, and pipe lines that represented years of endeavor. It has had torpedoed from under it scores of tank ships.

In large proportion, the oil industry is the enterprise of the United Nations, symbolic of the resourcefulness of free men. And because of this fact, the industry's fortunes have been largely in line with the course of events for the Anti-Axis forces, full of troubles and setbacks, but attended by determination to solve all problems of the future.

In its beginning, the war disrupted the operations with respect to European consumption and sources of supply, and that restriction tightened with the invasions of Western Europe in 1940 and opening of the Eastern European front in 1941. Then, early in 1942, the war descended upon the important part of the industry in the Far East. At the same time, it struck staggering blows in the Western Hemisphere. And now, after preliminary feinting, it camps menacingly before the gates to the oil resources of the Caucasus and the Near East, to make complete the disordering of operations throughout the world.

Living Within Its Shell

Deficient in petroleum reserves, Western Europe normally depends largely on South America and North America, and to some extent on the Near East, for supplies. But under German domination, Europe has had to live within its shell, and there has been no oil except for waging the war; while Venezuela, Colombia, Mexico, and the United States, as exporting countries, have been cut out of those markets. Civilian use of oil is little more than a memory in the occupied countries, while the same is true also even in Germany, Italy, and the United Kingdom. Only war industries and the armed forces share in the use of the limited quantities of oils available.

The Western Axis powers have surprised some of the military and petroleum economics experts in stretching their supplies out enough even for their wide-scale military operations. And the wonder increases when it is considered that there has been notable lack of success in developing new fields in Rumania and even in maintaining established production there. ***However, there can be little doubt that the Axis of the West now is gravely concerned over its deficiency of oil. The bitter fighting in Southern Russia is a desperate struggle for oil, as well as a part of a supreme effort to dispose of an exasperating enemy.***

New fields being developed in Rumania under German pressure are said to be insignificant, and there was 3 percent less drilling in the country in 1941 than in 1940, while crude-oil production dropped 10 percent and total exports 11 percent (to 22,000,000 barrels out of 36,000,000 produced). That was the overall result of the German influence, although exports by German-controlled companies were increased, while German control of the industry widened, through extension of credits to smaller companies on purchases of machinery, through "collaboration" of larger Rumanian and formerly French-controlled companies, and through "agreements" with companies formerly controlled by British interests.

With regard to Russia, the German advances so far have gained the valuable industrial and agricultural regions of the Ukraine, but without the oil that has been used in operating them. Just as the seized regions required oil in Russian hands, they need oil in German hands.

Another Blackout

Nevertheless, the net result has been another instance of a blackout of an important part of the normal world utilization of petroleum. Russia had several moderate-sized refineries on the northern coast of the Black Sea, now lost to the Germans, and fed into the Ukraine not only the output of those plants but also great quantities of oils moved through the Caucasus by pipe line to terminals and large refineries on the east coast of the Black Sea, principally at Batum and Tuapse. Those latter refineries have capacity for processing nearly 200,000 barrels daily of crude (70,000,000 a year), and are deprived of the Ukraine market, although they have been used to help supply the heavy Soviet military requirements for oils and the needs of remaining war industries, with shipments diverted around the Ukraine by rail to Rostov. Also leading to the Rostov area is the large and long products pipe line, that carries oils from the Grozni producing-refining center on the Caspian Sea. From the Rostov area oils normally could go up two railroads leading to Moscow. But the branch going through Kharkov and Kursk fell to

ANNUAL INTERNATIONAL NUMBER

The OIL WEEKLY presents herewith its annual summary of oil operations outside of the U. S. A. War developments and restrictions prevent the publication of detailed information on many countries but it is possible to trace the trend of developments in the world oil situation and particularly in the Western Hemisphere where the United Nations must look for most of their oil supplies for their victory drive.

—Official U. S. Navy Photograph.

WAR AND OIL—*". . . patrol planes will use from 200 to 400 gallons of aviation gasoline per hour, depending on size and number of engines, and thousands of planes are in daily use over the Atlantic and Pacific."*

the Germans last winter and is at present in German hands, while the rail line through Voronezh also has been crossed along an extended section and now may be definitely lost. The only remaining rail route from the Caucasus to central Russia and Moscow is that via Stalingrad.

The current campaign threatens to leave only that rail route and the Volga River for supplying oils of the Caucasus to the interior and to Moscow, provided the fields are successfully held. And even such movements are dangerously threatened, with the Germans driving steadily toward Stalingrad, which is on the Volga. With rail shipments through Voronezh permanently cut off and rail and river movements through Stalingrad severed, the fields and refineries of the Caucasus would be largely divorced from large consuming areas and refineries of the interior of Russia. In such event, about 80 percent of the Soviet oil industry would be lost to Russia, except for use by armies and industries within the Caucasus. For the part of the Russian oil industry in the Urals and elsewhere in the eastern portion of the country represents only about 20 percent of the total. Such a situation would call for the difficult undertaking of bringing in oil supplies from the Western Hemisphere, through northern Russia.

Russia's Future

In 1941, Russia produced a record output of 238,000,000 barrels of crude, it is indicated, against 218,000,000 in 1940. Military consumption was great, but civilian use was cut drastically, in reflection of rigid conservation and the giving up of the rich Ukraine lands that had been using much oil.

The Russian oil industry, second only to that in the United States, already has had a revolutionary experience by reason of the war. And it faces a precarious future, which could bring scorched-earth destruction of oil properties that would be terrible to record.

While the petroleum industry of Russia now occupies the most crucial position in the world picture in oil, that immediately southward, in the Near East, is of comparable strategic importance in the war, being the source of oils for the United Nations in the campaign in northern Africa and the Mediterranean, just as the Caucasus supplies Russia.

It may be assumed that the oil fields of Iraq continue to send crude through the pipe line across the deserts to Haifa, Palestine, although war forced discontinuance of operation of the branch forking off Syria to Tripoli. At Haifa, there is refining capacity for about 40,000 barrels of crude daily (14,600,000 per year, which the Nazis have bombarded frequently); and apparently, it was almost fully utilized in 1941, in supplying the British fleet in the Mediterranean, with the result that Iraq produced about 12,650,000 barrels of crude. However, in reflection of the cessation of movement to Tripoli, that output was only half the 1940 production of 24,225,000 barrels. Iraq's loss of market was at least in part Venezuela's gain, for tankers that had been moving Iraq oil around Africa were put to delivering to the United Kingdom South American oils, over the shorter distance across the Atlantic.

It may be further assumed that the British fleet continues, meanwhile, to draw freely on Iran, Bahrein Island, and Saudi Arabia, through the several large refineries in the Persian Gulf; while land forces in northeastern Africa also may be depending in part on oils brought from the Persian Gulf, around Arabia, and through the Red Sea.

The refinery at Abadan, at the northern end of the Persian Gulf, one of the largest in the world, and the comparatively large one at Bandar Shapur were more than adequate for processing Iranian crude when Iran produced 78,000,000 barrels in 1939, and Iran's crude output was off to about 64,000,000 barrels (175,000 daily) in 1941, it is estimated.

The American-controlled refinery on Bahrein Island, with crude capacity of about 35,000 barrels daily, affords processing capacity equal to production of Bahrein Island and Saudi Arabia, on the basis of output in 1941, when the former accounted for 6,800,000 barrels and the latter for 5,800,000.

In consequence of the loss of the oil fields and refineries of the East Indies, the United Nations have been forced to turn to other sources of supplies for the Far East, and while a substantial part of the needed oils will come from the Western Hemisphere, some likely will be taken from the Near East, as indicated by the fact that heretofore, China, the Philippines, and other Far Eastern areas provided export markets for the Bahrein Island refinery.

While the oil industry of the Near East remains fairly safe in the hands of the United Nations, it is, like the oil of the Caucasus, an avowed ultimate objective of the European division of the Axis. There can be no doubt that Japan, too, looks with covetous eyes upon the oil of the Near East.

With the Near East oil in the hands of the Axis powers, they would be doubly fortified; in the first place, in having the oil resources for themselves, and in the second place, in making it necessary for the United Nations to go for all supplies to North and South America.

Far East Exemplifies War

While the Caucasus and the Near East are today the militarily important spots in the world oil picture, the Far East has afforded so far the outstanding actual development of 1942, a development exemplifying most impressively the destructiveness of war. Through the military action of a few weeks early in the year, a highly essential and useful segment of the oil industry, built up through years of effort in the tropics, was virtually blotted out. The Japanese conquered the East Indies and invaded Burma, but they got only the blackened and twisted ruins of refineries, storage tanks, marine terminals, pipe lines, wells, and housing facilities that had constituted the oil industry of the Far East. They captured some wells in

British Borneo, but refineries, wells, and other facilities were generally destroyed throughout the Netherlands East Indies; while destruction of fields and properties in Burma was reported to have surpassed in effectiveness even the methodical, well-planned earth-scorching in Netherlands Indies.

The attitude with which the properties were destroyed by their owners was compared with that exhibited by the Russians in blowing up the Dnieper dam, which to the Soviets was symbolic of the spirit of the people and of the development of their modern industrialized economy.

When the properties at Balik-Papan and vicinity, in Dutch Borneo, were destroyed in January, 1942, the radio at Batavia carried to the Dutch a description of the destruction, which embodied this comment: "We are certainly not glad to lose what has been built up for years by the ingenuity of our people, but we will go on destroying it for the sake of our Empire. Once the tables are turned, it will be rebuilt with all the means at our disposal."

It was estimated that it would take the Japanese six months to a year to develop any substantial crude oil production above what they were able to capture; while construction of any material refining capacity would require several years.

The industry as built up by the Dutch, British, and Americans required costly installations and development in the realms of exploration, production, and refining, and also the work of thousands of men, including many with highly specialized training and experience. Oil centers were self-contained communities, backed up by established sources of supplies in machinery, equipment, materials, and other requirements. Obviously, to re-establish the industry even on a reduced scale would consume years.

Nevertheless, the seriousness of the loss of the Far Eastern oil properties for the United Nations cannot be overstated, because they were located where needed, while the only substitute sources are thousands of miles away.

Furthermore, there is danger of overemphasizing the blighting of the fruit of conquest for Japan. For the destruction was not complete, and every thousand barrels of daily supply that Japan can get from the properties will strengthen that nation.

Insofar as refineries were concerned, there can be little doubt in most instances that demolition was highly effective. However, Japan's carefully laid plans may have involved building up around the Sea of Japan extra refining capacity to process crude obtained in such circumstances as now exist. The world does not know how much refining capacity Japan has in addition to the 30 or so small and scattered plants of about 75,000 barrels aggregate daily crude capacity that have been pinned down. For a while, of course, any crude delivered to Japanese refineries from the East Indies will merely replace supplies formerly purchased there and in the United States, and extra capacity will be needed only when crude supply is increased above former imports.

In the Netherlands East Indies, the Dutch had about 100,000 barrels per day of refining capacity in two plants at Palembang, Sumatra; 45,000 in a plant at Balik-Papan, Dutch Borneo; and enough capacity in several other plants to raise the total to about 175,000 barrels of crude per day; while in British Borneo was a 20,000-barrel plant. In Burma, there was a 20,000-barrel refinery at Rangoon, while several small plants raised total crude capacity to about 35,000 barrels daily. The above totals indicate that the United Nations had to sacrifice around 230,000 barrels per day of potential refinery throughput. That amount was equivalent to a third of the refining capacity of the East Coast district of the United States, and was more than one half of the Oklahoma-Kansas-Missouri capacity.

—Official U. S. Navy Photograph.

WAR AND OIL—*". . . the average destroyer requires 1700 barrels of fuel to cover 1000 miles at normal speeds. Under forced draft in combat four times as much fuel will be used . . ."*

A 200,000-Barrel-a-Day Loss

In line with refining capacity, the crude oil production affected by the Japanese invasion of the Far East, on the basis of results in 1941, was over 200,000 barrels daily, including about 20,000 in Burma and 185,000 in the East Indies (165,000 in Netherlands Indies and 20,000 in British Borneo). All that production was from about 7200 wells, although the large share contributed by the East Indies, coming from better fields, was from only about 3300 wells, with Burma's 20,000 barrels drawn from 3900 wells.

While Dutch Borneo fell to the Japanese in January, the fields of Sumatra and large refineries at Palembang were held until mid-February.

Japan's seizure of the oil of the Far East apparently represented a desperate gamble for oil that had to be somehow obtained as much as it constituted vital strategy in other respects. For Japan was able to produce in 1941 only 8,200,000 barrels of petroleum and substitutes, whereas indicated civilian consumption alone in that year was 26,300,000 barrels. Petroleum economists estimate that the minimum to which civil consumption can be cut during war is 20 percent of peacetime use; and on that basis, it was pointed out immediately after Japan went to war that even the curtailment of civil use to the minimum of 5,000,000 barrels annually would leave only 3,200,000 barrels per year or 8800 barrels daily, for military purposes, a calculation which indicated virtual certainty that Japan would either have to capture new sources of supply or continue to make withdrawals from storage. The present significance of these figures is that Japan has essential civil consumption covered with old, established supply, and that any supplies captured or developed in Burma and the East Indies can be used for military purposes.

For the Western Hemisphere, the effect of the war this year has been principally that of forcing curtailment of consumption, narrowing of markets, and limiting of production. This effect has resulted from the shortage of transportation, caused by sinkings of tankers

—Photo by U. S. Army Signal Corps

WAR AND OIL—*Tanks have added materially to war requirements for gasoline, diesel oil and special lubricants.*

and diversion of boats to military service.

Colombia's Plight

Largely an exporting country, Colombia lost important European markets early in the war; and an even more important market has been lost this year through interference with shipments to Canada. Colombia's exports of 1940 included 9,000,000 barrels to Canada (25,000 daily), 8,000,000 to Netherlands West Indies, over 2,000,000 to France, 1,000,000 to Argentina, nearly 500,000 to Italy, and 1,000,000 to other countries. The shipments to Canada formerly involved tanker hauls up the St. Lawrence River to Montreal and beginning in November, 1941, tanker shipments to Portland, Maine, and movement from there to Montreal by pipe line, capable of handling 30,000 barrels daily. (The line was designed for ultimately handling 50,000 barrels daily.) The submarine campaign presumably interfered to some extent with this movement this spring and deprived Colombia of a certain proportion of the total market for its crude, forcing corresponding curtailment of production, which had totaled 24,500,000 barrels in 1941.

The same situation affected Canada in one of its principal sources of supply and had some influence in the curtailment of consumption and stringent rationing now necessary in Canada. The latter country consumed 50,700,000 barrels of petroleum in 1941, but was able to produce only 10,125,000 barrels. Aside from the crude imported from Colombia, imports normally come largely from the United States, principally in the raw form. In 1940, when Canada consumed 53,400,000 barrels and produced 8,591,000 barrels of crude, a deficiency of 44,800,000 barrels, 9,000,000 came from Colombia, 3,000,000 from Venezuela, and nearly 32,000,000 from the United States, of which about 29,000,000 was crude and 3,000,000 products.

Venezuela's experience during the war has been one of ebbing and flowing fortunes, as reflected by statistics on production and exports. Third largest producing country in the world and exporter of the bulk of the production, Venezuela accounted for 206,470,000 barrels of crude output in 1939, and in the same year exported over 198,000,000 barrels of petroleum and its derivatives. In 1940, however, many of its markets were shut off or sharply curtailed by the war, and despite larger shipments to the United States, both production and exports dropped about 20,000,000 barrels, the former to 185,570,000 and the latter to 178,267,000.

Nevertheless, in reversal of the 1940 decline, production climbed back upward and reached a new high of 223,784,000 barrels in 1941, as shipments to the United States and Great Britain sharply increased, with the former engaged in its armament program and the latter sending tankers to South America instead of around Africa to the Near East.

In 1942, however, the tide has turned again, as shipments to the United States and Canada have been sharply curtailed by the tanker situation, while scarcity of boats also has restricted other shipments, although Venezuela still has important markets in supplying American and British military requirements.

Information is not revealed, of course, on military consumption and movements. But reference to a map of the world naturally suggests the probability that oils from Venezuela and Colombia may be supplying not only some of the requirements in the Atlantic but also to some extent the needs in the Pacific, particularly in view of the fact that heavy oils available in South America would supplement those from California, where stocks have been substantially reduced.

Argentina has succeeded in moderately increasing petroleum production, but output falls materially short of consumption; and the tanker shortage, preventing normal imports, has forced severe curtailment of use this year. The country produced 21,763,000 barrels of crude in 1941, but as the fourth largest user of oil in the world, consumed 33,000,000 barrels.

Peru's production has declined nearly 50 percent since 1937, although output was down only from 12,126,000 barrels in 1940 to 11,922,000 in 1941, with domestic consumption off a little to 3,100,000 barrels. In view of disturbed world conditions and limited producing ability, further declines are indicated for 1942.

[*Continued on page 120*]

WAR AND OIL—*Along with battleships, planes and tanks the ordinary motorized units consume large quantities of petroleum products. Here is a cavalry unit converted to mechanized "mounts."*

—Photo by U. S. Army Signal Corps

Large Decline Indicated In World Crude Output

By JACK LOGAN, Associate Editor

WORLD production of crude oil in 1942 is virtually certain to fall materially short of the all-time record output of 1941, in reflection of world-wide disturbances of the output, transportation, and use of oils, brought about by the war.

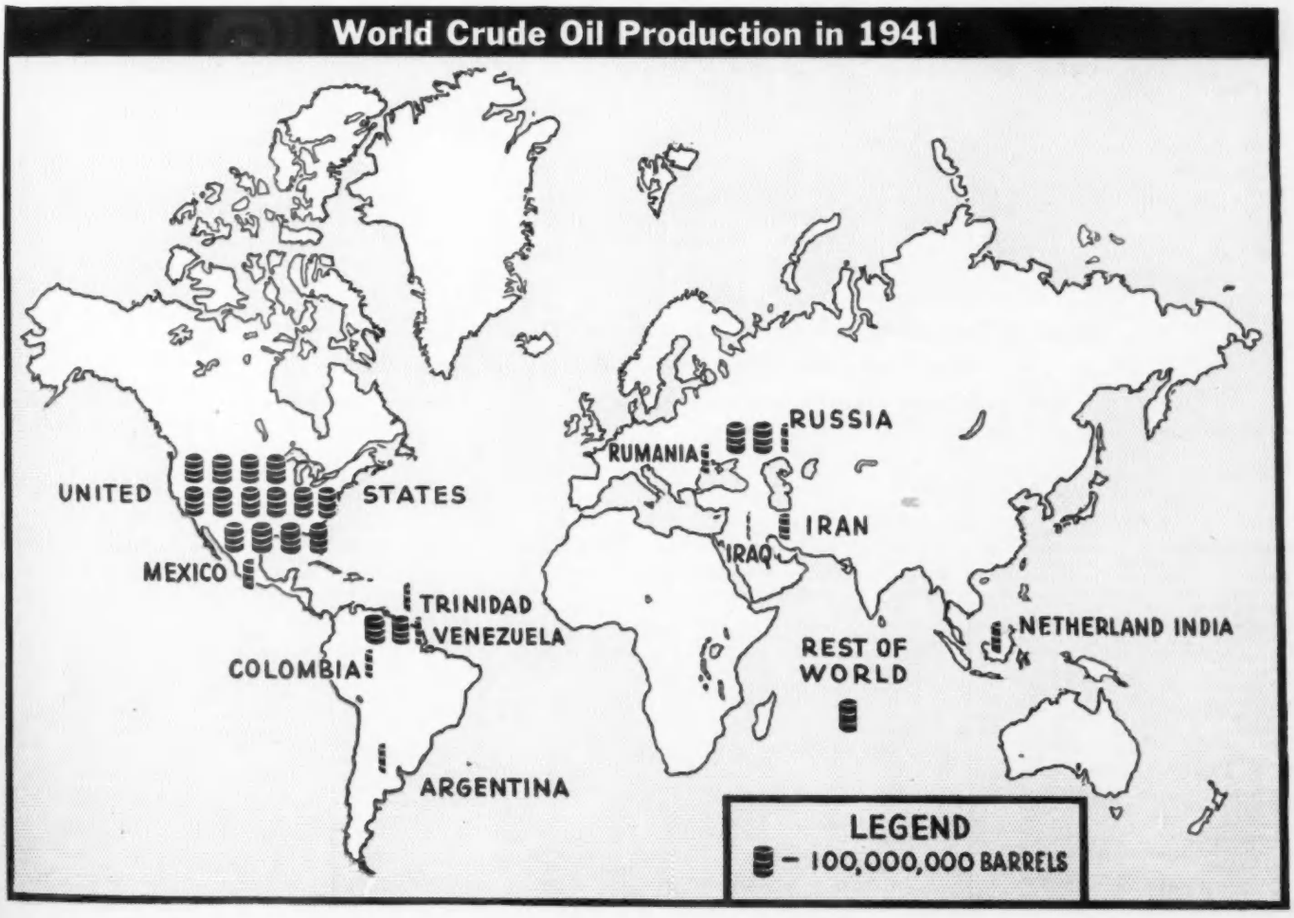
It is highly doubtful if the 1941 record hereafter will be equaled or exceeded until after the war, when normal civilian use is restored and when oil fields, transportation facilities, and refineries are rehabilitated to take care of the demand.

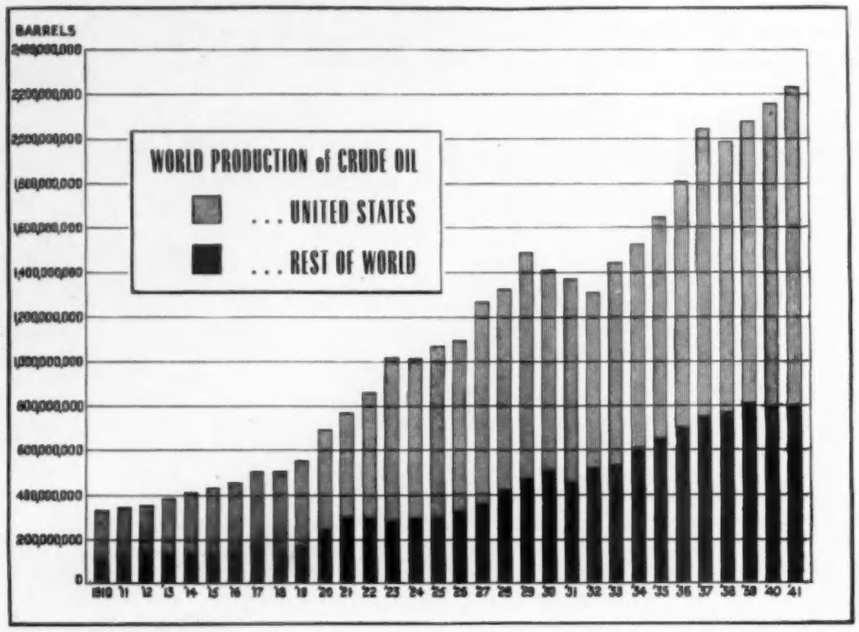
The prospect of a substantial decline in crude-oil production for 1942 looms in the face of the fact that output in the first half of this year apparently was not greatly below that in the corresponding period of last year.

Controlling factors in the indicated decline of world production of crude oil this year include the following: (1) the wiping out of large volumes of production in the Far East through the scorched-earth policy of the unsuccessful defenders of the important oil fields of the East Indies, (2) probable inability of the Russians to maintain normal production, (3) shutting off of a part of Venezuela's normal market through submarine interference with shipments to the United States and other countries, and (4) a decrease of possibly 30,000,000 barrels, or 2 percent, in United States production for this year as a whole in comparison with 1941, despite relatively large output in the early part of the year and despite the continuing necessity of drawing on domestic fields to replace supplies normally brought in from South America.

Crude-oil production in the Near East has become largely dependent on military developments, and any estimate of current output as well as any forecast of production for the remainder of the year would be highly conjectural. However, any likely change in production in Iran and Iraq for 1942 would not prevent the indicated world decline, although increases or decreases there would accentuate or cushion the world decrease. Europe, outside of Russia, likewise cannot be expected to exert a determining influence on the world trend, and furthermore, probably will show no significant changes.

In the countries mentioned above as largely influencing world production for





this year, output has been in recent years as herewith indicated, the 1939 figures showing practically normal output and 1940 and 1941 the results as the war progressed.

YEAR	Barrels Production of Crude Oil	Percent Change from Year Before
World—		
1937	2,039,231,000	
1938	1,988,041,000	— 2.5
1939	2,085,444,000	+ 4.9
1940	2,141,946,000	+ 2.7
1941	2,226,836,000	+ 4.0
United States—		
1937	1,279,160,000	
1938	1,214,355,000	— 5.1
1939	1,264,962,000	+ 4.2
1940	1,353,214,000	+ 7.0
1941	1,404,182,000	+ 3.8
Rest of World—		
1937	760,071,000	
1938	773,686,000	+ 1.8
1939	820,482,000	+ 6.0
1940	788,732,000	— 3.9
1941	822,654,000	+ 4.3

An especially important effect on world production for 1942 will be that exerted through the indicated sharp drop for Netherlands Indies, outstanding producing area of the Far East, where wells were systematically ruined by their owners early in the year before they fell into the hands of the invading Japanese. For this year, only a fraction of the 1941 production of over 50,000,000 barrels is to be expected.

Russia has had considerable difficulty in recent years in maintaining or moderately increasing crude-oil production in line with domestic requirements, as there has been only limited success in developing new fields to supplement the diminishing reserves of the Baku district. It is indicated, therefore, that the maintenance of production now is doubly difficult, because of handicaps imposed by the war, in connection with providing necessary materials, transportation, and technical supervision of operations. Oils have to be supplied for military operations, but like other warring countries, Russia is providing those requirements in considerable part through elimination of non-essential civilian consumption. It should not be surprising if the Russian fields turn out some millions of barrels less in 1942 than in 1941 if they are succesfully defended, and before they would be surrendered to the Germans, they probably would be made virtually incapable of producing any oil.

Venezuela set a new all-time record in producing 223,784,000 barrels of crude in 1941, but that much production is not indicated for this year, in view of submarine interference with shipments to the United States, Canada, and other countries. Venezuela's sharp increase for 1941 over 1940 reflected exceptionally large shipments to the United States and increased shipments to Great Britain when the latter country began sending tankers across the Atlantic instead of around Africa and to the Near East for supplies, a development which also was reflected in a sharp decline at the same time in production of Iraq. The current trends of shipments from Venezuela to Great Britain constitute information of military significance and are not revealed. However, any increases in such sales would at least partially represent substitution for discontinued shipments from the Near East and to that extent would not contribute to any increase in world production. In view of the tanker shortage and the constant threat of submarine attacks on shipments attempted,

Rank of Leading Oil Producing Countries Changes in 1941 as War Curtails Markets of Fields in Near East

Iraq drops below Argentina and Trinidad, and Bahrein Island below British Borneo

1931			1939			1940			1941		
Rank and Country	Barrels Production	Percent of World Total	Rank and Country	Barrels Production	Percent of World Total	Rank and Country	Barrels Production	Percent of World Total	Rank and Country	Barrels Production	Percent of World Total
World	1,372,532,000	100.0	**World**	2,085,444,000	100.0	**World**	2,141,946,000	100.0	**World**	2,226,836,000	100.0
1. United States	851,081,000	62.0	1. United States	1,264,962,000	60.7	1. United States	1,353,214,000	63.2	1. United States	1,404,182,000	63.0
2. Russia	162,842,000	11.9	2. Russia	216,866,000	10.4	2. Russia	218,600,000	10.2	2. Russia	238,150,000	10.7
3. Venezuela	116,613,000	8.5	3. Venezuela	206,470,000	9.9	3. Venezuela	185,570,000	8.7	3. Venezuela	223,784,000	10.0
4. Rumania	49,127,000	3.6	4. Iran (Persia)	78,151,000	3.7	4. Iran (Persia)	66,900,000	3.1	4. Iran (Persia)	64,000,000	2.9
5. Iran (Persia)	44,376,000	3.2	5. Netherlands India	62,087,000	3.0	5. Netherlands India	62,011,000	2.9	5. Netherlands India	53,704,000	2.4
6. Netherlands India	35,539,000	2.6	6. Rumania	45,483,000	2.2	6. Mexico	44,036,000	2.1	6. Mexico	43,837,000	2.0
7. Mexico	33,039,000	2.4	7. Mexico	42,898,000	2.1	7. Rumania	42,182,000	2.0	7. Rumania	38,147,000	1.7
8. Colombia	18,237,000	1.3	8. Iraq	30,791,000	1.5	8. Colombia	25,593,000	1.2	8. Colombia	24,553,000	1.1
9. Argentina	11,709,000	0.9	9. Colombia	23,857,000	1.1	9. Iraq	24,225,000	1.1	9. Argentina	21,763,000	1.0
10. Peru	10,089,000	0.7	10. Trinidad	19,270,000	0.9	10. Argentina	20,609,000	1.0	10. Trinidad	21,211,000	1.0
11. Trinidad	9,744,000	0.7	11. Argentina	18,613,000	0.9	11. Trinidad	20,219,000	0.9	11. Iraq	12,650,000	0.6
12. India, British	8,200,000	0.6	12. Peru	13,508,000	0.6	12. Peru	12,126,000	0.5	12. Peru	11,922,000	0.5
13. Poland	4,662,000	0.3	13. Burma	7,873,000	0.4	13. Canada	8,591,000	0.4	13. Canada	10,125,000	0.5
14. British Borneo	3,854,000	0.3	14. Canada	7,838,000	0.4	14. Burma	7,731,000	0.4	14. Burma	7,762,000	0.3
15. Sakhalin	2,734,000	0.2	15. Bahrein Island	7,589,000	0.4	15. Bahrein Island	7,074,000	0.3	15. British Borneo	6,864,000	0.3
16. Japan	2,050,000	0.2	16. British Borneo	7,097,000	0.3	16. British Borneo	7,047,000	0.3	16. Bahrein Island	6,794,000	0.3
Others Chiefly 9 Countries	8,636,000	0.6	Others Chiefly 18 Countries	32,091,000	1.5	Others Chiefly 19 Countries	36,218,000	1.7	Others Chiefly 19 Countries	37,388,000	1.7

Distribution of World Crude Oil Production in 1941

NORTH AMERICA
1,479,505,000 BBL.
66.44%
SOUTH AMERICA
283,809,000 BBL.
12.74%
EUROPE
289,245,000 BBL.
12.99%
ASIA - 4.76%
OCEANIA-60,571,000 BBL.
AFRICA
7,668,000 BBL.
0.35%
UNITED STATES 1,404,182,000 BBL. 63.06%
MID-CONTINENT 942,522,000 BBL. 42.32%
TEXAS 507,584,000 BBL. 22.79%
GULF COAST 232,407,000 BBL. 10.43%
CALIFORNIA 230,263,000 BBL. 10.34%
MIDWESTERN 145,534,000 BBL. 6.53%
ROCKY MOUNTAINS 39,095,000 BBL. - 1.79%
APPALACHIAN 28,800,000 BBL. 1.29%
ROUMANIA 38,147,000 BBL. - 1.71%
U.S.S.R. 238,150,000 BBL. 10.70%
VENEZUELA 223,784,000 BBL. 10.05%
COLOMBIA 24,553,000 BBL. 1.10%
ARGENTINA 21,763,000 BBL. 0.98%
PERU 11,922,000 BBL. .053%
BOLIVIA 230,000 BBL. .010%
ECUADOR 1,557,000 BBL. .007%
MEXICO 43,837,000 BBL. 1.97%
CANADA 10,125,000 BBL. - 0.45%
TRINIDAD 21,211,000 BBL. 0.95%
OTHER U.S. 1,699,000 BBL. 0.08%
OTHER N. AMERICA 150,000 BBL. 0.01%
KANSAS 83,261,000 BBL. - 3.74%
SEMINOLE 37,920,000 BBL. - 1.70%
OKLAHOMA CITY 33,099,000 BBL. - 1.49%
REST OF OKLAHOMA 83,630,000 BBL. 3.76%
NEW MEXICO 39,369,000 BBL. - 1.77%
ARKANSAS 26,227,000 BBL. - 1.18%
WEST TEXAS 92,907,000 BBL. 4.17%
EASTERN TEXAS 57,673,000 BBL. 2.59%
WEST CENTRAL TEXAS 11,314,000 BBL. 0.51%
EAST TEXAS FIELD 132,586,000 BBL. 5.95%
REST OF E. TEXAS 29,087,000 BBL. - 1.31%
NORTH TEXAS 38,544,000 BBL. - 1.73%
PANHANDLE 27,831,000 BBL. - 1.28%
SOUTHWEST TEXAS 26,634,000 BBL. - 1.20%
LOWER TEXAS 43,265,000 BBL. 1.94%
UPPER TEXAS 98,588,000 BBL. 4.43%
SOUTH CENTRAL TEX. 6,000 BBL.
SOUTH LOUISIANA 90,554,000 BBL. 4.06%
NORTH LOUISIANA 13,354,000 BBL. - 1.14%
LOUISIANA 115,908,000 BBL. - 5.20%
KENTUCKY 6,752,000 BBL. - 0.21%
INDIANA 6,634,000 BBL. - 0.30%
ILLINOIS 134,138,000 BBL. - 6.02%
MICHIGAN - 16,381,000 BBL. - 0.74%
COASTAL 32,224,000 BBL. 1.45%
SAN JOAQUIN VALLEY 93,811,000 BBL. 4.21%
LOS ANGELES BASIN 104,228,000 BBL. 4.68%
ROUMANIA 38,147,000 BBL. - 1.71%
CZECHOSLOVAKIA 109,000 BBL. - 0.01%
ALBANIA 1,381,000 BBL. - 0.06%
POLAND 3,319,000 BBL. - 0.15%
GERMANY 4,479,000 BBL. - 0.02%
AUSTRIA 4,438,00 BBL. - 0.20%
HUNGARY 692,000 BBL. - 0.03%
ITALY 2,474,000 BBL. - 0.11%
OTHERS (EUROPE) - 10,000 BBL. - 0.00%
U.S.S.R. 238,150,000 BBL. 10.70%
VENEZUELA 223,784,000 BBL. 10.05%
PERU 11,922,000 BBL. - 0.53%
BOLIVIA 230,000 BBL. - 0.01%
ECUADOR 1,557,000 BBL. - 0.07%
COLOMBIA 24,553,000 BBL. 1.10%
ARGENTINA 21,763,000 BBL. 0.98%
NETHERLAND INDIES 53,704,000 BBL. 2.41%
SARAWAK AND BRUNEI 6,864,000 BBL. 0.31%
AUSTRALIA 3,000 0.00%
BAHREIN ISLAND 6,764,000 BBL. - 0.31%
INDIA, BRITISH 10,932,000 BBL. - 0.45%
IRAQ 12,650,000 BBL. - 0.57%
JAPAN (INCL. TAIWAN) 2,659,000 BBL. - 0.12%
SAKHALIN 4,048,000 BBL. - 0.18%
SAUDI ARABIA 5,871,000 BBL. - 0.26%
IRAN (PERSIA) 64,000,000 BBL. 2.87%

it is indicated that Venezuelan production will be down sharply for 1942. Producing partially for export, Colombia may be expected to have a similar experience. Other South American countries are relatively less important producers and will have more stable markets in local and other South American demands. However, they will be affected, like the United States, by the lack of new automobiles, trucks, and tires, and indicated declines of demand would force decreases in production.

While the developments in the above discussed countries indicate a substantial aggregate decline in crude production, such decline normally might be offset by the United States alone, in its role as producer of nearly two thirds of world totals. In effect, therefore, the United States continues to determine the world trend, although such determination will be this year the assurance of a decline and not as heretofore the maintenance of the upward trend. The No. 1 producing country may experience itself a decline of as much as 30,000,000 barrels for the year, despite showing a substantial gain for the first 6 months. For the first half of 1942, United States production was approximately 18,000,000 barrels greater than output in the corresponding period of 1941, in reflection of exceptionally large yield in the early part of the year. The effect of that production was not yet nullified at the middle of the year, despite sharp curtailment of output after launching of the submarine campaign against movements of oils to the East Coast. Actually, while shipments into the East Coast district were sharply curtailed, the curtailment was accounted for in considerable measure by the cutting off of imports from South America. Meanwhile, there were withdrawals from storage, and domestic crude was substituted in so far as overland transportation permitted, and there existed an artificial stimulus for domestic production. The net effect was that United States crude output for the first 6 months of 1942 totaled approximately 685,000,000 barrels, which was nearly

18,000,000 barrels, or 2.7 percent, more than the 667,338,000 barrels produced in the corresponding months of 1941.

For the latter half of 1942, however, there is indicated a decrease in United States production which will more than offset that 18,000,000-barrel increase for the initial half.

For July, 1942, the demand for domestic crude was expected to be 8 percent less than in July, 1941, the Bureau of Mines indicated in its forecast for the month. If that same degree of curtailment under the 1941 trend were to continue to the end of the year, the demand for the last 6 months would be only 690,000,000 barrels, or nearly 47,000,000 less than the actual production of 736,844,000 barrels in the latter half of 1941. (In that period, the indicated demand was 749,661,000 barrels, but 12,817,000 came from storage). It is possible that subsequent months may bring relatively better trends than that for July, in reflection of increased shipments of oils into the East Coast district, through enlarged pipe-line movements and other means. However, for the country as a whole, conservation of cars and tires will continue to hold down demand for petroleum products and for domestic crude, and that effect will be accentuated as time passes. Furthermore, last year's trend after July was exceptionally high, runs to stills and crude production having set all-time records, and it will be against that extraordinary trend that the demand for crude will compare henceforth.

Meanwhile, the physical facilities for transporting the oils by overland methods will place limitations on the nearness of the 1942 trend of movement to the 1941 trend. The indicated demand of 3,635,500 barrels daily for domestic crude in July took into consideration the largest movement to the East Coast that could be expected for that month. Without any increase of that 3,635,500-barrel daily rate of July, the domestic demand for crude would amount to only 669,000,000 barrels for the last 6 months of 1942, which would be 68,000,000 barrels, or 9.2 percent, less than the 737,000,000 barrels of actual production in the corresponding months of 1941. Merely to assure a decrease of no more than the July figure of 8 percent for the latter half of 1942 as a whole in comparison with the like period of 1941, it would be necessary for the demand to total 690,000,000 barrels, as previously indicated; and to produce that quantity of crude, output would have to average 3,748,000 barrels daily for the 184 days from July 1 to December 31, 1942. That average would be 112,500 barrels greater than the 3,635,500-barrel daily average demand for domestic crude estimated by the Bureau of Mines for July. Thus it would be necessary for the handling of petroleum and products to be increased by well over 100,000 barrels daily above the July rate to assure even the extension of the 8 percent average decrease for the last 6 months. Actual production on that basis would involve 47,000,000 barrels less production during those months than in the corresponding months of last year, and would indicate a total United States crude production of 1,375,000,000 barrels for 1942, a decrease of 29,000,000 barrels, or 2 percent, from the 1,404,182,000 barrels reported for 1941. If a better showing than this is to be made in United States crude demand and justifiable production, it will be necessary to do better than increase the handling of oils by over 100,000 barrels daily above the July rate, as here contemplated.

Annual Crude Oil Production
(Thousands of Barrels)

COUNTRY	1939	1940	1941
Far East—			
Netherlands, India	62,087	62,011	53,704
British Borneo	7,097	7,047	6,864
Burma	7,873	7,731	7,762
British India	2,327	2,250	2,270
Sub-Total	79,384	79,039	70,600
Russia	216,866	218,600	238,150
Venezuela	206,470	185,570	223,784
United States	1,264,962	1,353,214	1,404,182
Total, Above Countries	1,767,682	1,836,423	1,936,716
Near East—			
Iran (Persia)	78,151	66,900	64,000
Iraq	30,791	24,225	12,650
Bahrein Island	7,589	7,074	6,794
Saudi Arabia	3,934	5,365	5,871
Sub-Total	120,465	103,564	89,315
Total, All Above Countries	1,888,147	1,939,987	2,026,031
Rest of World	197,297	201,959	200,805
World Total	2,085,444	2,141,946	2,226,836

WORLD PRODUCTION FIGURES

By Countries, By Years, Will Be Found on Pages 114, 116, 118.

The all-time record production of crude oil in the world in 1941 represented the response of oil fields to actual current demand, and was not to any extent artificial; for there were not during the year any indicated additions of oils to storage, while on the contrary, there were substantial withdrawals in the United States and probably also in the rest of the world. The stocks of all oils in the United States were 13,000,000 barrels lower on December 31, 1941, than at the beginning of the year; and the Axis countries of Europe, and Russia, fighting along the front from the Black Sea to the Baltic, doubtless had to draw on storage instead of being able to add to stocks, while other countries in the aggregate likely experienced no material change in storage.

The world production of crude in 1941 totaled 2,226,836,000 barrels, according to the March 31, 1942, issue of "International Petroleum Trade," published by the United States Bureau of Mines. That quantity was 85,000,000 barrels or 4.0 percent greater than the output of 2,141,946,000 barrels reported for 1940.

The increase over 1940 would have been greater if the 1940 production in the United States had not been artificially high to the extent that 38,000,000 barrels of all oils went to storage. Without that excess of United States production, 1940's world output would have been only 2,104,000,000 barrels, and the 1941 figure of 2,226,836,000 would have represented an increase of 123,000,000 barrels or nearly 6 percent. Furthermore, if the 1941 production had been greater to the extent that the 13,000,000 barrels of oils taken from storage in the United States could have been left in the tanks, then the year's output in the world would have been 2,240,000 barrels, which would have been 136,000,000 barrels or 6.5 percent more than the actually justified production of 1940.

Up until the end of 1941, the war had failed to arrest the normal growth of world production of crude oil, despite destruction of oil industry properties and restriction of markets. But that net result was possible only because the United States and other countries which were not at war continued to show gains and thereby more than offset curtailment in the warring countries. And as brought out in detail above, the war finally will bring in 1942 an interruption of the normal growth of production, in reflection of the involvement of the United States in it.

Figures herewith given on production in recent years in the United States and in the rest of the world in the aggregate emphasize this dominant role that the United States takes in determining the world trend.

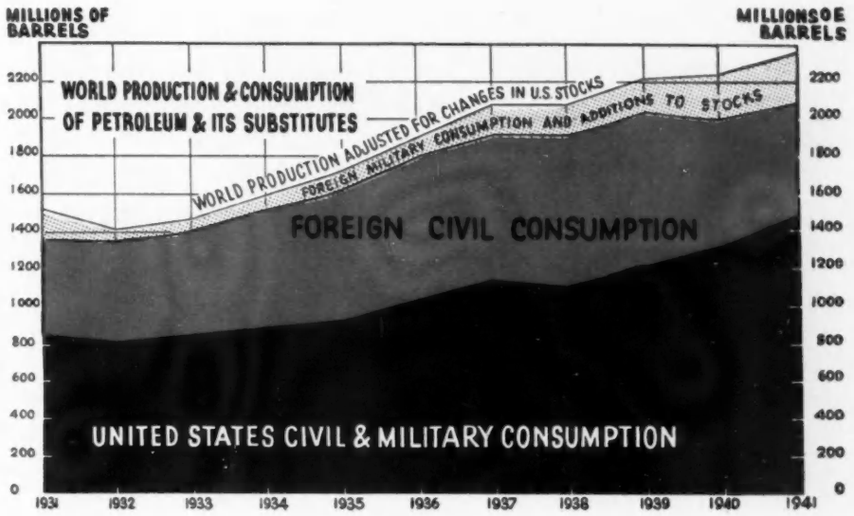
War Proving Deterrent to Over-All Oil Usage

Large military requirements do not offset Civilian slump—Consumption may be off 5 percent

DESPITE the fact that modern warfare requires comparatively large quantities of petroleum, the war is proving to be no stimulant to the over-all use of petroleum but on the contrary a deterrent. The longer the present war has lasted and the farther it has spread, the more importantly it has curtailed the use of oil, until world consumption as a whole now is on a downward trend. For the first time since the great business depression of a decade ago, total oil consumption of the world will show a decline in 1942, in reflecting that practically the whole world now is involved The 1942 consumption may be as much as 5 percent below 1941.

Even while the war was confined to Europe, it was having a definitely restrictive effect on petroleum consumption on that continent, although declines there were more than offset, meanwhile, by continued expansion of use in the rest of the world, with the United States particularly responsible for the continued growth in total world consumption in 1940 and 1941, in the face of curtailment in Europe.

When the United States was drawn into the war, it too immediately felt the restrictive influences on petroleum consumption; and this country, accounting for more than two thirds of world use, very likely will use less in 1942 than in 1941, making practically certain a decline in world consumption for the year. Toward the indicated decline the rest of the world in the aggregate probably will contribute, as civilian use virtually around the globe will be retarded, with curtailment drastic in numerous countries.



The world now faces this prospect of a decline in total consumption of petroleum, despite the probability of an increase in military consumption; just as Europe heretofore has seen total use steadily diminish, in the face of rising military consumption. While military requirements have increased, it has been necessary to curtail civilian use by even greater amounts.

Although countries outside the United States went to war in 1939, that year brought only limited military operations, and during the year they used for all purposes, including additions to stocks, an all-time record quantity of 976,889,000 barrels of petroleum and petroleum substitutes, an amount that has not been subsequently equaled. Those countries outside the Untied States restricted total use to 893,829,000 barrels in 1940, consuming an increased amount for military operations but materially curtailing civilian use; and in 1941 they used an even smaller total, greatly increasing military use in pitting German armies against Russian, but further sharply curtailing civilian consumption.

While those developments were occurring, the United States was building up its defense, and in connection therewith, it experienced unprecedented industrial activity and consistently and sharply increased consumption of petroleum, with the result that those gains carried over into world totals of consumption, providing new highs in 1940 and 1941.

Adjustment to War

Upon its entry into the war, the United States found it necessary to cut

Continued Expansion of Total Use Shown in Summary of World Consumption of Petroleum and Substitutes

(From statistics embodied in the A.I.M.E. paper, "World Consumption of Petroleum and Its Substitutes in 1941," by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of Cities Service Co.)

(Figures Indicate Barrels)

COUNTRY	1938	1939	1940	1941	Percent Change 1940-1941
Foreign Countries—					
Civilian Cinsumption	776,835,000	786,687,000	684,194,000	574,653,000	— 16.0
Indicated Military Consumption and/or additions to stocks	153,409,000	190,202,000	209,635,000	304,507,000	+ 45.3
Total Foreign Consumption (and/or additions to stocks)	930,244,000	976,889,000	893,829,000	879,160,000	— 1.6
United States—					
Total, Civilian and Military Consumption	1,140,923,000	1,236,076,000	1,333,770,000	1,492,000,000	+ 11.9
World—					
Total Consumption, Civilian and Military	2,071,167,000	2,212,965,000	2,227,599,000	2,371,160,000	+ 6.4

back less essential civilian consumption in greater amount than it stepped up military use; and that readjustment to war conditions makes inevitable an interruption of the long-continued rising trend of world consumption.

There has not yet occurred, however, a full adjustment of American consumption to war conditions, although there has been a degree of stabilization after the initial shock. Consequently, while it is indicated that there will be less consumption in the United States in 1942 than in 1941, it is not clear what the situation will be in 1943 and thereafter. However, if the experience in the United States so far since entry into the war is indicative of the future and if the American experience does not differ from that in each of the other warring countries, then it is to be expected that 1943 and subsequent years will bring further decline in the trends of United States and world consumption. On every hand, the war is forcing curtailment of the satisfaction of normal civilian wants and needs, so that more materials and manpower can be devoted directly to the waging of war. The oil industry ultimately cannot expect to be immune from this characteristic restrictive effect of war except in so far as gains in military and war-industry consumption compensate for elimination of non-essential civilian use. It is evident that military use of oil by the United Nations henceforth will expand greatly, as American war production makes great quantities of military equipment available. But on the other hand, as military needs for oil increase, more and more of the industry's efforts and facilities must be devoted to supplying those needs, and the more difficult it will become to maintain the flow of supplies for civilian use. All things considered, therefore, it appears inescapable that there will be difficulty in maintaining over-all supply and consumption; that less essential civilian use likely will have to be curtailed at least by the amount that military and war-industry use increase, if not to an even greater extent.

Consumption in 1941

Tabulated herewith are figures showing world consumption of petroleum and petroleum substitutes in 1941, broken down for the United States and for the rest of the world in the aggregate, with the civilian and military use of the foreign countries segregated; corresponding figures being given also for each preceding year back through 1938, the last year before the war began. These figures are based on statistics and calculations made by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of Cities Service Company, in a paper presented before the American Institute of Mining and Metallurgical Engineers. Although statistics have not been available on military consumption and changes in stocks outside the United States, the military use and/or additions to storage abroad are approximately indicated by the difference between world production, which can be fairly well ascertained or estimated, and known world consumption, plus any withdrawals from storage in the United States or minus any additions to United States stocks. It was upon that basis that figures here given on foreign military use were calculated by Garfias and associates.

World consumption for all purposes, including military use and any building up of military supplies abroad totaled 2,371,160,000 barrels in 1941, an all-time high and an increase of 6.4 percent over the 2,227,599,000 barrels indicated for 1940. The 1940 consumption had been 0.7 percent above that of 2,212,965,000 barrels in 1939; and the 1939 figure was 7 percent above the 2,071,167,000 barrels indicated for pre-war 1938.

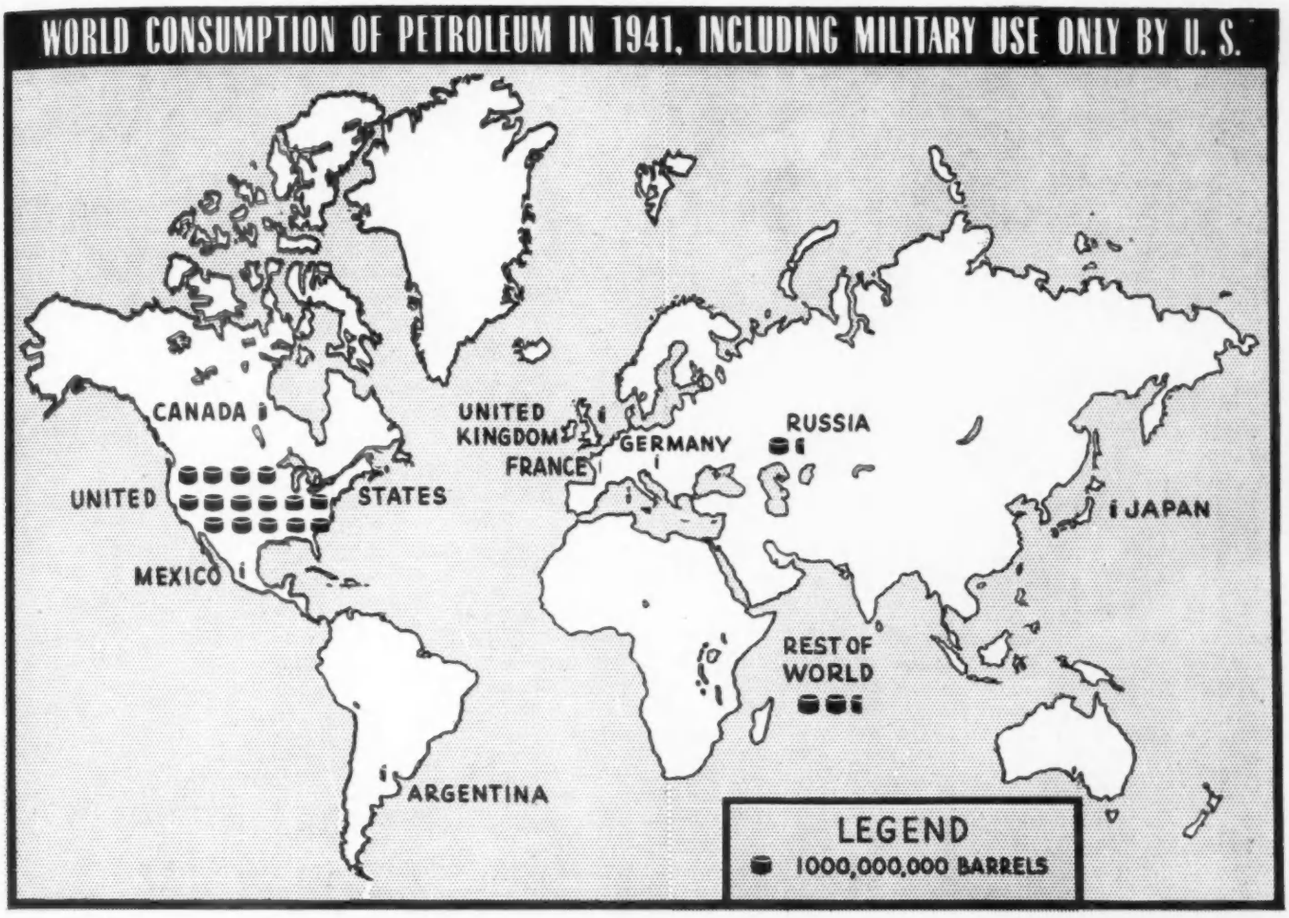
As indicated previously, these figures reflect steady gains in the United States that have outweighed continued declines in the rest of the world in the aggregate, with the foreign losses in consumption due to sharp curtailment of civilian use that has been only partially

War Causes European Countries to Lose and Western Hemisphere Countries to Gain in Rank in Civilian Consumption of Petroleum

(Military consumption not included except that by United States)

Figures by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of Cities Service Company, in papers prepared for American Institute of Mining and Metallurgical Engineers

1938 (Before War)			1939 (War's Beginning)			1940 (Spread of War)			1941 (More War)		
Rank and Country	Barrels Consumption	Percent of World Total	Rank and Country	Barrels Consumption	Percent of World Total	Rank and Country	Barrels Consumption	Percent of World Total	Rank and Country	Barrels Consumption	Percent of World Total
1. United States	1,140,923,000	59.5	1. United States	1,236,076,000	61.0	1. United States	1,333,770,000	66.1	1. United States	1,492,000,000	72.2
2. Russia	164,500,000	8.6	2. Russia	170,600,000	8.4	2. Russia	180,000,000	8.9	2. Russia	138,500,000	6.7
3. United Kingdom	90,300,000	4.7	3. United Kingdom	88,200,000	4.4	3. Canada	53,423,000	2.6	3. Canada	50,700,000	2.5
4. Germany	56,700,000	3.0	4. Germany	54,000,000	2.6	4. United Kingdom	50,000,000	2.5	4. Argentina	33,000,000	1.6
5. France	49,100,000	2.6	5. Canada	49,200,000	2.4	5. Germany	35,000,000	1.7	5. United Kingdom	32,000,000	1.5
6. Canada	45,900,000	2.4	6. France	44,200,000	2.2	6. Argentina	32,850,000	1.6	6. Japan	26,300,000	1.3
7. Argentina	29,500,000	1.5	7. Argentina	30,950,000	1.5	7. Japan	26,200,000	1.3	7. Mexico	23,680,000	1.1
8. Japan	25,000,000	1.3	8. Japan	25,400,000	1.3	8. Mexico	23,289,000	1.2	8. Germany	21,000,000	1.0
9. Netherlands, W. I.	20,650,000	1.1	9. Italy	21,800,000	1.1	9. France	21,500,000	1.1	9. Netherlands, W. I.	20,160,000	1.0
10. Italy	20,500,000	1.0	10. Netherlands, W. I.	19,850,000	1.0	10. Netherlands, W. I.	16,730,000	0.8	10. British India	15,890,000	0.8
11. Mexico	18,000,000	0.9	11. Mexico	18,600,000	0.9	11. British India	15,800,000	0.8	11. Italy	14,180,000	0.7
12. Australia	16,250,000	0.8	12. Australia	16,280,000	0.8	12. Australia	14,950,000	0.8	12. Australia	12,400,000	0.6
13. British India	15,450,000	0.8	13. British India	15,700,000	0.8	13. Italy	14,050,000	0.7	13. Rumania	11,770,000	0.6
14. Rumania	12,780,000	0.7	14. Rumania	14,400,000	0.7	14. Rumania	13,077,000	0.6	14. Netherlands, E. I.	11,760,000	0.6
15. Netherlands, E. I.	11,350,000	0.6	15. Netherlands	11,800,000	0.6	15. Netherlands, E. I.	11,500,000	0.6	15. Venezuela	11,110,000	0.5
16. Netherlands	10,950,000	0.6	16. Netherlands, E. I.	11,450,000	0.6	16. Union of South Africa	10,500,000	0.5	16. France	10,000,000	0.5
17. Iran	10,600,000	0.6	17. Iran	11,100,000	0.5	17. Venezuela	10,041,000	0.5	17. Union of South Africa	9,320,000	0.5
18. Sweden	10,050,000	0.5	18 Sweden	10,950,000	0.5	18. Iran	9,660,000	0.5	18. Iran	9,160,000	0.4
19. Venezuela	8,925,000	0.5	19. Union of South Africa	10,300,000	0.5	19. Brazil	9,500,000	0.5	19. Brazil	8,790,000	0.4
20. Brazil	8,820,000	0.4	20. Venezuela	9,530,000	0.5	20. Egypt	6,700,000	0.3	20. Egypt	7,060,000	0.3
Total 20 Leading Countries	1,736,248,000	90.5	Total 20 Leading Countries	1,870,386,000	92.3	Total 20 Leading Countries	1,888,540,000	93.6	Total 20 Leading Countries	1,958,690,000	94.8
Other Countries	181,678,000	9.5	Other Countries	156,171,000	7.7	Other Countries	129,424,000	6.4	Other Countries	107,963,000	5.2
World Total	**1,917,927,000**	**100.0**	**World Total**	**2,026,557,000**	**100.0**	**World Total**	**2,017,964,000**	**100.0**	**World Total**	**2,066,653,000**	**100.0**
World Total Outside United States	777,004,000	40.5	World Total Outside United States	790,481,000	39.0	World Total Outside United States	684,194,000	33.9	World Total Outside United States	574,653,000	27.8



offset by increased military consumption.

The countries outside the United States effected a net reduction of about 15,000,000 barrels (1.6 percent) in overall consumption in 1941, having used only 879,160,000 barrels, as compared with 893,829,000 in 1940. This curtailment was achieved despite an indicated increase of about 95,000,000 barrels (45.3 percent) in military use, which rose from 209,635,000 barrels in 1940 to 304,507,000 in 1941, as broadened warfare, especially in Russia, required great quantities of oil, with intense fighting and maintenance of long supply lines involved.

Foreign Civilians Get Less

Civilian consumption outside the United States meanwhile was slashed from 684,194,000 barrels in 1940 to 574,653,000 in 1941, a reduction of 109,541,000 barrels or 16 percent, although the cuts were made largely in the warring countries and represented much larger decreases for them than the 16 percent decline of all foreign civilian use. Four leading European countries, all at war, accounted for 85,000,000 barrels of the cut-back of civilian oil use in 1941, and for them, that meant a 30 percent reduction for that year alone, although three of them previously had already materially reduced consumption. The four countries, Russia, the United Kingdom, Germany, and France, together used only 201,500,000 barrels for civilian purposes in 1941, compared with 286,500,000 in 1940 and 357,000,000 in the practically normal year 1939. From the 1939 use, they had cut down in 1941 by 44 percent.

The increasingly severe blackout of civilian oil use in Europe's principal consuming countries is indicated in an accompanying table.

Civilian Consumption of Petroleum and Its Substitutes

(Thousands of Barrels)

COUNTRY	1939	1940	1941
Russia	170,600	180,000	138,500
United Kingdom	88,200	50,000	32,000
Germany	54,000	35,000	21,000
France	44,200	21,500	10,000
Italy	21,800	14,050	14,180
Total 5 Countries	378,800	300,550	215,680

Russia curtailed civilian use by 41,500,000 barrels or 23 percent in the first year of involvement in the war, with hostilities not beginning until the middle of the year.

The United Kingdom further shelved automobiles and made other reductions of oil use in 1941 and saved 18,000,000 barrels or 36 percent as compared with consumption in 1940, while using thereby only a little over one third as much as in 1939. Germany further cut back 40 percent in 1941 and likewise used only a little over one third the quantity consumed in 1939. After having reduced use over 50 percent in 1940, France dispensed with over half that remainder in 1941, having consumed only 23 percent as much as in 1939, and having virtually reached the limit of what is considered possible in curtailing civilian use. Italy reduced consumption 50 percent in 1940 but apparently made no further reduction in 1941.

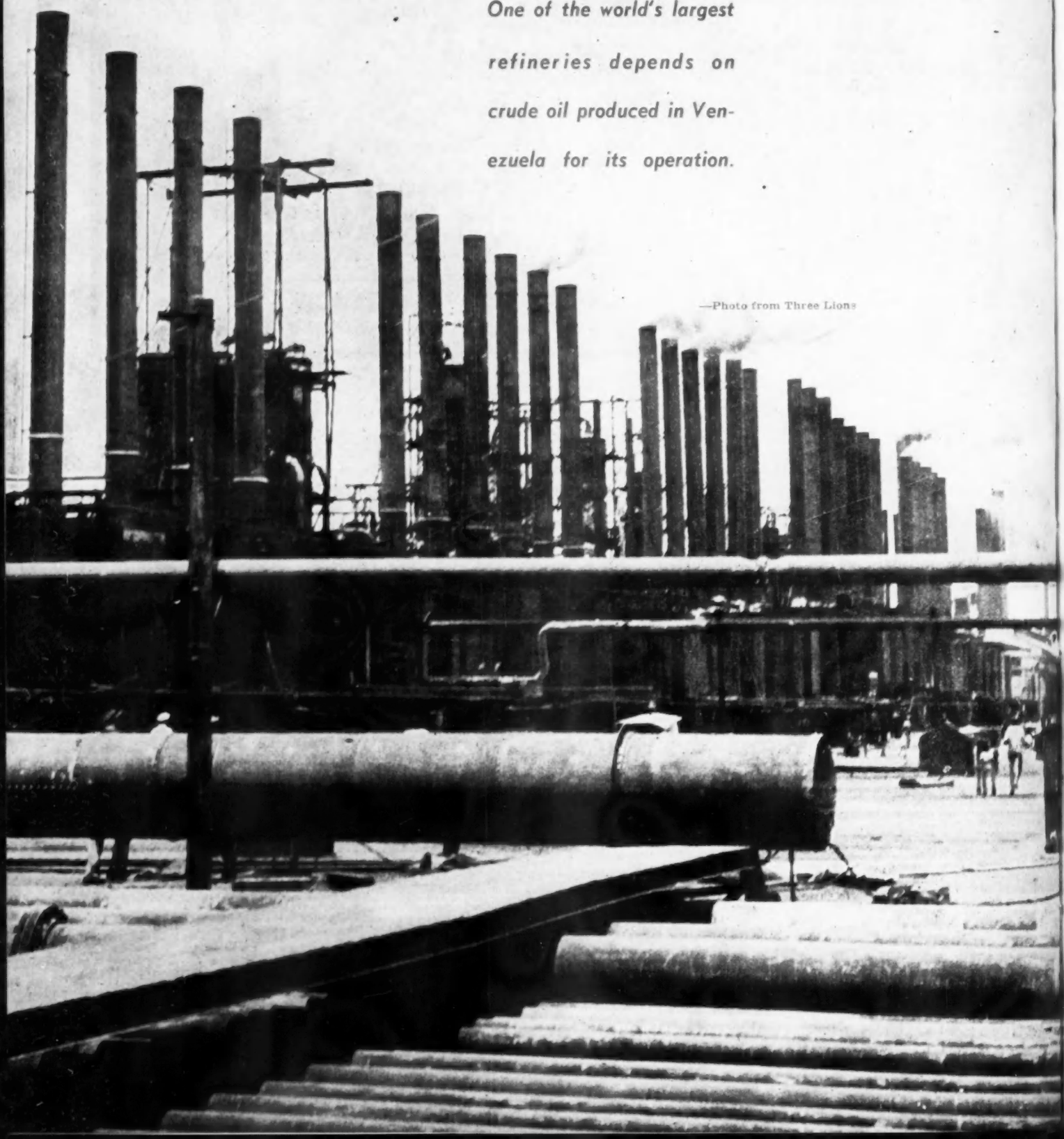
United States Curtailment

As indicaed previously, the principal determining factor in the trend of world consumption of petroleum in 1942 will be the curtailment of civilian use in the United States, which will make it impossible for this country to continue offsetting declines in the rest of the world, as heretofore. This United States outlook is doubly significant, as comsumption in the remainder of the world ap-

[*Continued on page 122*]

Venezuela Sets Crude

One of the world's largest refineries depends on crude oil produced in Venezuela for its operation.



—Photo from Three Lions

Production Record Before War Crisis Checks Exports

Production in 1941 Crowds Russia for Second Place . . . New Fields Opened

By JACK V. HIGHTOWER, Foreign Editor

FAVORED by war markets and successful in establishing a number of new fields, the Venezuelan oil industry set a new record last year in producing 226,000,000 barrels of oil, a daily average of 620,000 barrels. This surpassed the previous record, set in 1939, by 10 percent and topped 1940 production by 21 percent. Although official Russian statistics are not at hand, United States Bureau of Mines estimates for Russia show that Venezuela is challenging Russia as the world's second place oil producer. Russia is estimated to have produced 238,150,000 barrels last year. The Venezuelan gains came from heavier production in the western fields and from rapidly rising output from the newer eastern fields.

Considerable wildcatting occurred in the eastern region. Particularly noteworthy in this drilling were two tests which discovered productive structures in two localities comparatively remote from the western fields and the principal fields of the east. One of these new areas was in central Guarico state and the other was 30 miles north of the San Joaquin-Roble-Santa Rosa district in Anzoategui. One apparent new field was discovered by the deepest well in South America, Socony-Vacuum Oil Company's Anaco 1, in the Santa Ana district, drilled to 11,294 feet.

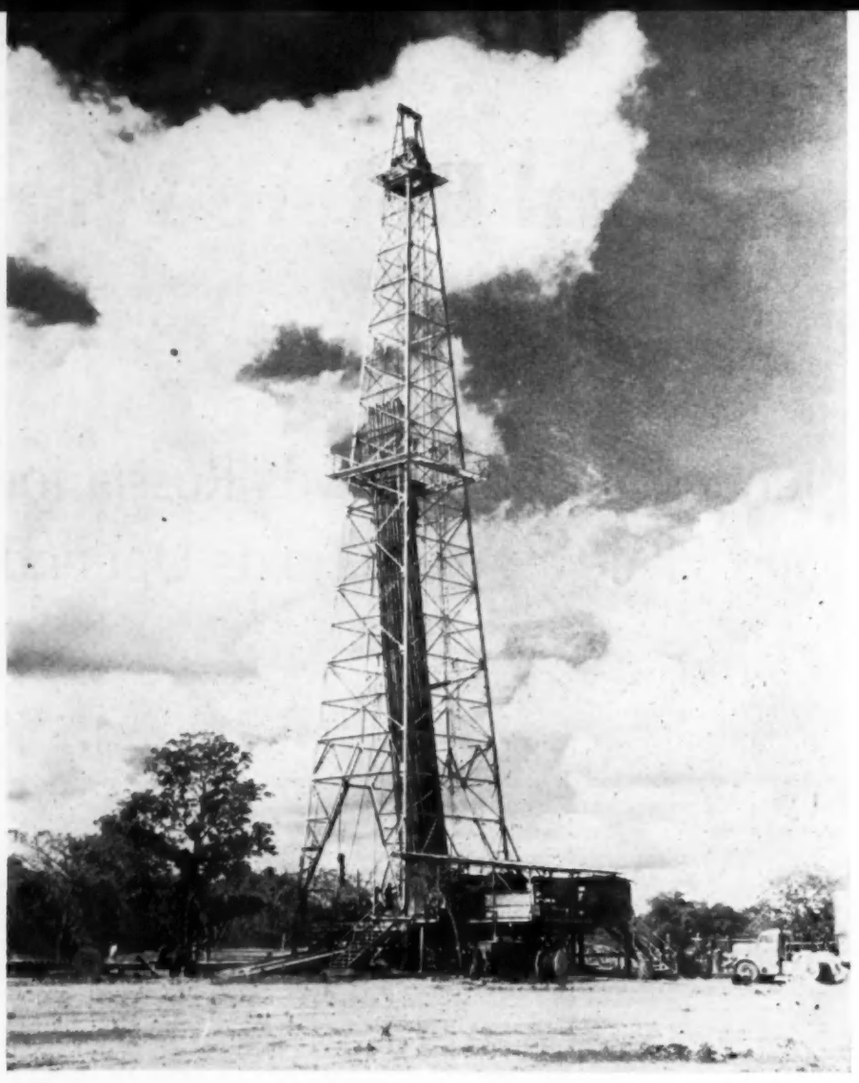
Production Increases General

The 1941 production increase was shared by most Venezuelan fields. Heavy crude from the western fields was in demand for fuel oil, and the high-gravity oil of many eastern fields was refined for gasoline and lubricants. Of total Venezuelan exports, 194,400,000

Venezuela Production and Drilling Data*

NAME OF FIELD	PRODUCTION DATA—Barrels				WELL DRILLING DATA				PRODUCING WELL DATA AS OF JANUARY 1, 1942				
	Total Production in 1940	Total Production in 1941	Daily Ave. Production Jan. 1, 1942	Cumulative Production Through 1941	Wells Drilling End 1941	Wells Drilled in 1941	Wells Drilled in 1940	Wells Drilled, all Years	Natural Flow	Pumping	Gas or Air Lift	Closed In	Abandoned
Lagunillas	58,464,785	66,277,491	210,113	1,013,416,571	1	99	100	1,522	281	843	59	259	80
Tia Juana	36,946,186	51,317,470	191,150	206,564,965	3	25	28	563	192	291	33	43	4
Quiriquire	21,676,451	18,636,310	53,928	190,892,183	....	....	....	316	100	47	....	154	15
Cabimas†	19,324,559	22,855,803	70,686	406,986,690	3	68	49	1,380	163	614	93	388	122
Oficina	15,414,106	24,491,383	73,123	42,448,108	8	104	101	246	168	3	11	41	23
Mene Grande	10,812,402	12,513,573	39,539	232,876,598	1	21	23	467	46	139	41	222	19
El Cubo	6,196,869	6,654,311	21,899	68,975,801	2	10	5	138	27	58	....	35	18
Temblador	3,994,215	3,302,831	8,906	13,303,706	....	....	1	92	60	....	....	17	15
Jusepin	3,995,154	7,192,387	33,313	11,703,657	5	42	30	98	75	....	....	20	3
Bachaquero	1,682,959	964,408	13,840	7,020,331	1	8	38	86	28	....	....	54	4
Pedernales	1,795,888	1,586,267	4,223	8,764,409	....	....	....	21	9	....	....	6	6
Cumarebo	1,630,785	2,073,202	6,850	28,226,399	....	....	....	129	39	14	1	61	14
San Joaquin	1,097,562	2,873,925	10,762	4,013,210	2	10	3	20	18	....	....	....	2
La Concepcion	839,308	1,198,872	3,903	23,030,796	1	7	....	115	12	39	....	63	1
Hombre Pintado	658,093	563,575	1,384	2,079,139	1	5	9	42	....	18	5	19	....
El Roble	654,379	1,774,869	6,752	2,431,073	2	3	1	5	5	....	....	....	....
La Paz	448,891	417,510	991	6,040,731	....	....	....	35	....	21	....	10	4
El Mene de Mauroa	321,803	237,078	648	24,839,732	....	....	....	347	....	22	20	139	166
Santa Ana	75,790	199,569	615	310,777	....	1	....	3	1	....	....	2	....
Las Palmas	42,461	25,031	73	373,650	....	....	....	13	....	3	....	6	4
Los Caritos	15,507	12,235	140	27,742	....	....	2	3	....	....	....	1	2
Leona-Tigre	17,551	83,439	408	101,221	3	10	1	13	1	....	....	11	1
Guario	16,188	109,437	270	125,625	3	1	1	2	1	....	....	1	....
Socororo	11,520	847	....	12,367	....	1	....	2	....	....	....	1	1
Tabasca	978	3,992	....	48,006	....	....	....	1	....	....	....	1	....
Santa Rosa	....	216,414	631	216,414	2	2	....	3	2	....	....	....	1
Santa Barbara	....	32,067	110	32,067	3	12	....	12	....	....	....	12	....
Distrito Mara	....	26,674	30	83,405	1	....	....	4	1	....	....	2	1
Rincon Largo	....	17,776	....	17,776	1	1	....	1	....	....	....	1	....
Las Ollas	....	3,607	....	3,607	....	1	....	1	....	....	....	1	....
Others	....	....	....	2,253,111	4	5	10	243	....	....	....	34	209
Total Venezuela	186,134,390	225,662,353	754,287	2,297,219,867	47	436	402	5,923	1,229	2,112	263	1,604	715

* Production figures converted from original data in metric tons on basis of conversion factors for the individual fields, but crude from "Other fields" assumed as 7 barrels per ton.
† La Rosa, Ambrosia, Punta Benitez.



Guario 4, Socony-Vacuum Oil Company's 1500 Barrel Per Day Producer Drilled to 6843 feet in San Joaquin area, eastern Venezuela, 1941.

(Photos courtesy Socony-Vacuum Oil Co.)

barrels, or 95 percent, went to the refining centers at Curacao and Aruba and the United States, the remainder going largely to Canada, the United Kingdom and Spain. Both the eastern and western sections of the country showed about the same gain of slightly over 20 percent relative to 1940, and the output in the west remained at 73 percent of total Venezuelan production. Oficina, the foremost eastern field, jumped its production by 59 percent to 24,500,000 barrels. At the end of last year this field was listed as having 182 producers as compared with 109 at the close of 1940. The field had 41 wells closed in at the end of 1941, indicating the full potentiality of the area was not being used. Another leading eastern field, Jusepin, had 75 producing wells at the end of the year as against 22 in the same period of 1940. Among eastern fields the largest productive increases developed in El Roble and San Joaquin, in which the output rose 172 and 162 percent respectively. Intensive drilling occurred in these fields.

In Western Venezuela, the major fields showed increases ranging from 7 to 43 percent. Only Bachaquero showed a drop. Production there suffered a decrease of 43 percent. Eight wells were completed as compared with 38 completed during 1940, and at the close of 1941, 54 wells were closed in. The sharpest increases occurred in Tia Juana, Concepcion and Cumarebo, where the rises above 1940 production were, respectively, 39, 43 and 27 percent.

Tia Juana produces oil averaging 21.5° API and adapted to making fuel oil. At the end of 1941 in this field, there were 516 producing wells as compared to 352 producing at the close of 1940, and closed-in wells totaled 43 as against 162 in December, 1940. Comparable developments in the high-gravity fields of Cumarebo and Concepcion accounted for the gains in those two areas.

New Fields in the East

Drilling in Eastern Venezuela established a number of new fields. In Anzoategui state, the largest to go into commercial production was Mene Grande Oil Company's Santa Rosa field, about 12 miles northeast of the San Joaquin field. The first producer there was Santa Rosa 2, completed in January, 1941, for 2000 barrels daily. In the same district a few kilometers southwest of the Santa Ana field, The Texas

Below is Seismograph Operation in eastern Venezuela.

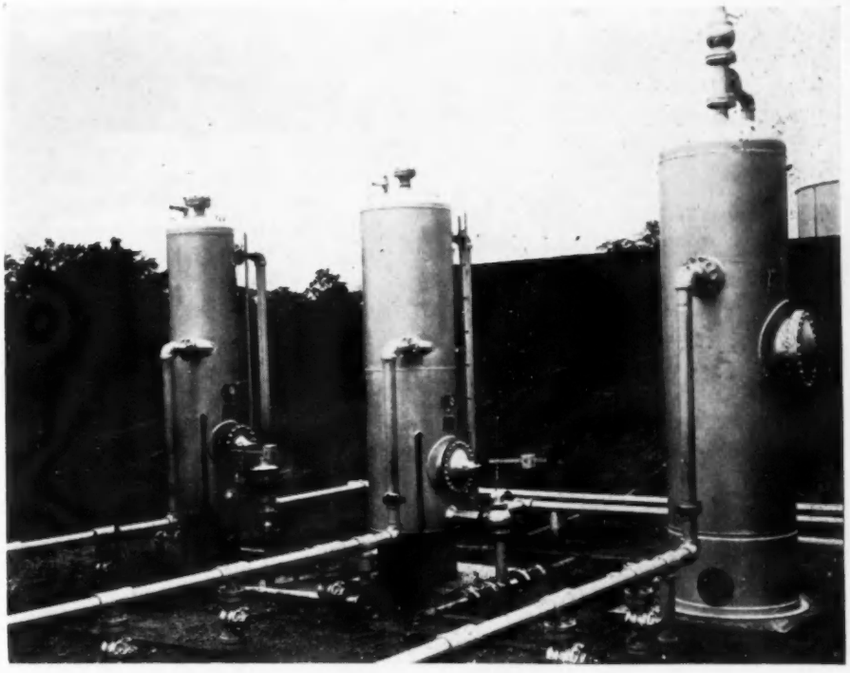
Company of Venezuela found a new field when Rincon Largo 1, drilled to 9631 feet, was completed as a producer late in 1941. In a perforation test of the uppermost Periquito sand at 8775-8790 feet, this well showed at the rate of 1487 barrels daily of 36-gravity oil through ⅜-inch choke. Mene Grande Oil Company's Leona-Tigre field, about 35 miles east of Oficina, was under development last year following completion of the discovery well late in 1940. Thirteen wells, only one of which was abandoned, had been completed by the end of 1941. Last January the field began shipping through a 33-mile, 10-inch pipe line running to the Mene Grande main artery to the Caribbean.

Outside Anzoategui, two new fields were discovered in Monagas state. The first of these was Venezuelan Petroleum Company's Santa Barbara field, established when Santa Barbara 1, drilled to 4320 feet on the Myer C concession 10 miles west-southwest of the Jusepin field, was completed in February, 1941, for several thousand barrels daily. It is understood the well encountered 100 feet of unbroken oil sand beginning at 4160 feet. Venezuelan government data show that 12 wells were drilled in the field during 1941, with 3 others drilling on December 31. An outlet for the wells was provided last month by completion of a 100-mile, 12-inch pipe line running northwest to the Mene Grande pipe line and thence parallel to it to the company's new terminal on the Caribbean near Puerto la Cruz. The line was built in about 6 months.

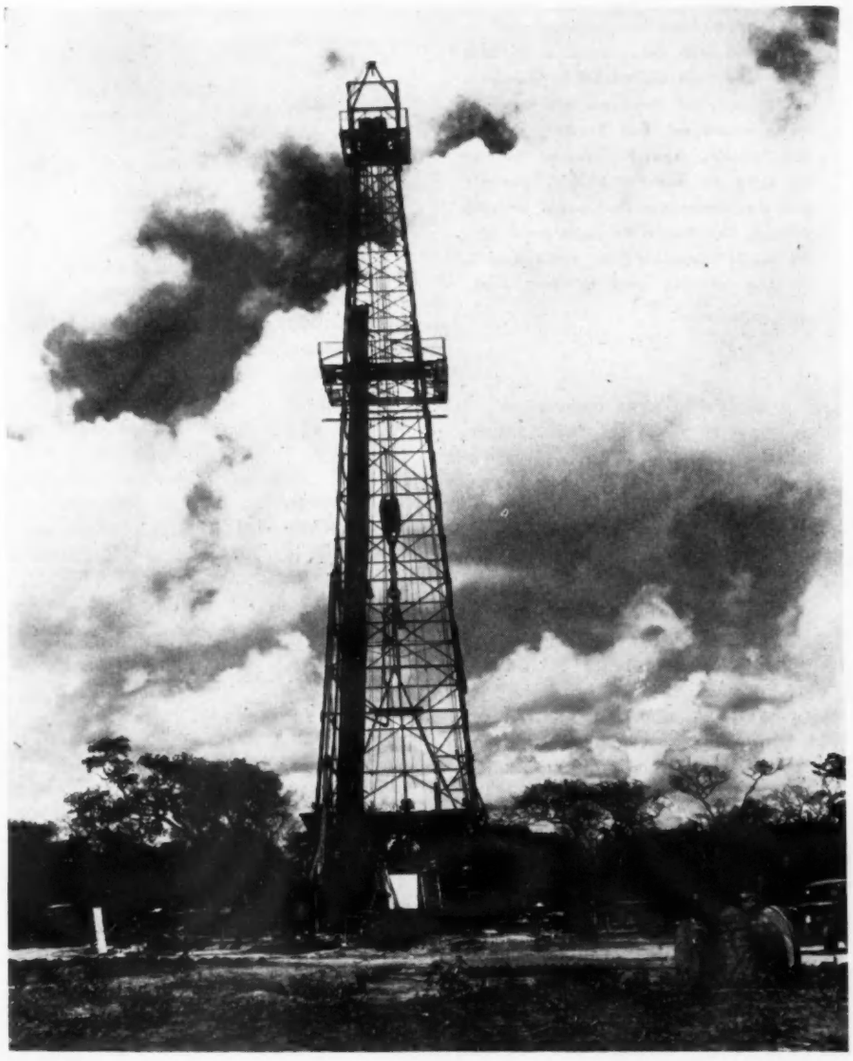
The other new field in Monagas is on the Amana concession, jointly operated by Standard Oil Company of Venezuela and Pantepec Oil Company. The first well, Mulata 1, 1.4 miles east of Santa Barbara 1, was completed in October as a gasser after reaching 4100 feet. In the same month, No. 2 was spudded 1400 yards south of No. 1 and was completed as a producer last January. On a test this well showed production at the rate of 570 barrels per day of 35-gravity oil through a ⅜-inch choke at two levels between 4590 and 4751 feet.

Mene Grande Oil Company opened a productive area in a hitherto undrilled region 30 miles north of the Santa Rosa field and 10 miles east of the Mene Grande pipe line in Anzoategui. The discovery well, Quiamare 1, was spudded last year and was drilled to 9055 feet.

(Photos courtesy Socony-Vacuum Oil Co.)



Oil and Gas Separator System for Wells in Socony-Vacuum Oil Company's Guario field, eastern Venezuela, 1941.



Socony-Vacuum Oil Company's Anaco 1 Producer, State of Anzoategui, eastern Venezuela. Drilled to 11,294 feet, deepest well in South America. Drilled in 1941 and testing at end of year. 15 miles northeast of Sta. Ana.

Last spring the well tested at the rate of 500 barrels per day of 38-gravity oil through a quarter-inch choke from around the 7300-foot level. The Quiamare structure is a well defined anticline with an east-west trend and is productive from several sands. Production from the well is going through a 3-inch fuel line into the Mene Grande pipe line, and further drilling is in progress.

Mercedes Petroleum Company, jointly owned by The Texas Company and Caracas Petroleum Company, has found a productive region 120 miles west of the nearest fields in Eastern Venezuela. The first well, Mercedes 1, was drilled in central Guarico state to 6232 feet last year and abandoned. The second test, a half mile south of No. 1, was spudded in the fall and drilled to 5586 feet last spring, when it was completed as a producer. Several sands were found. Tests of the upper sands showed considerable gas production. In tests of the lower strata, production was obtained at the rate of 363 barrels daily of 35-gravity oil through a quarter-inch choke. The sands are reported as highly permeable. Two more wells are drilling. Mercedes 2 is the second producer in the state.

Wildcat Drilling

The first producer in Guarico was completed in 1941 when Standard Oil Company of Venezuela drilled Las Ollas 1 to below 6800 feet at Las Ollas, about 30 miles west of the Santa Ana field and situated in the extreme eastern portion of Guarico. The Mercedes wildcats in the same state were described above. In Anzoategui, Socony-Vacuum in South America. This was Anaco 1, a producer which reached 11,294 feet on a dome about half way between El Roble and Santa Rosa fields. Capacity of the well has not been disclosed because testing which began last August has not been completed. The well was drilled as a Roble extension test, and is on one of five structures covering about 30 miles in a northeast-southwest trend. At around 8550 feet the first sands were found. It is considered that the well indicates a northeast extension of the El Roble field.

In southern Anzoategui state Socony-Vacuum Oil Company drilled Hamaca 1 to 3472 feet at a point 17 miles south of the Oficina field before abandoning. The company drilled another failure in Panchita 1, a 3606-foot test 38 miles west-southwest of Oficina. Other wildcats were Texas Petroleum Company of Venezuela's Rincon Largo 1 and Mene Grande Oil Company's Quiamare 1, both in Anzoategui, and Venezuelan Petroleum Company's Santa Barbara 1 and Pantepec-Standard Oil Company of Venezuela's Mulata 1, both in Monagas. These wells have previously been described.

1942 Developments

The new regions opened in Guarico and Anzoategui by Mercedes 2 and Quiamare 1 are receiving further test-

NEW VENEZUELA PIPE LINE COMPLETED

H. F. SINCLAIR, chairman of Consolidated Oil Corporation, has said that the 100-mile pipe line running from the Santa Barbara, Venezuela, oil field of Venezuelan Petroleum Company, a Consolidated subsidiary, to a Caribbean tanker terminal near Puerto la Cruz, is ready for operation. The 12-inch line runs northwest from the field in Monagas state over to the 16-inch Mene Grande pipe line and then parallels that line 18 miles northward to the Caribbean.

Construction of the line was begun last spring. Williams Brothers Corporation of Tulsa was the contractor. It is understood A. M. Garber of that company supervised the work in conjunction with W. R. Reed, general superintendent of the pipe line division of Sinclair Refining Company. Pipe for the line was ordered before the second well in the field was completed early last year and was delivered in October.

Capacity of the pipe line has not been disclosed, but Sinclair said a few weeks ago he hoped tanker capacity to handle 30,000 barrels per day from the line could be obtained. The Santa Barbara field had 12 wells completed in 1941 and 3 drilling at the end of the year.

Oil Company drilled the deepest well ing this year. Mene Grande Oil Company was drilling Quiamare 2, which is 2½ miles west of No. 1, below 2500 feet a few weeks ago. Mercedes Petroleum Company spudded No. 3 a mile east of the No. 2 discovery early this year and had reached 5700 feet by July 15. At the same time a fourth well, a mile west of No. 2, was drilling at 250 feet. The Texas Company of Venezuela was drilling Rincon Largo 2 below 7200 feet at a point just north of the No. 1 producer. The same company spudded a wildcat, Cimara 1, 4 miles west of Caritos 1 and 40 miles east of the Temblador field, and the well was drilling below 5300 feet on July 15.

In the new Mulata field, 9 wells had been completed up to June 15. Seven of these are producers and 2 are gas wells providing fuel for present operations. Two other wells were spudded in June, with encouraging indications in both. Four additional wells were scheduled to be drilled between June 15 and the middle of August. The field is closed in but could ship oil this year if a pipe line is constructed over the 14-mile stretch between the field and Standard Oil Company of Venezuela's pipe line running from the Jusepin field to the refinery at Caripito. On the Amana concession a short distance from the Mulata field, which is also on that concession, two wells have been drilled in the Jusepin extension. One is a producer and the other was abandoned.

Since last January the Venezuelan government has ceased releasing production and other statistics. The trend of production this year is therefore hard to estimate. The tanker situation, of course, has had an important bearing on Venezuelan operations since last December. As before pointed out, the bulk of Venezuelan crude is exported, and interference with this movement must inevitably cause a drop in production. The steel shortage in the United States is another factor that has to be considered in Venezuela this year, although no figures on exports of drilling equipment to Venezuela are available.

Production Gains in Principal Venezuelan Fields

REGIONS	1940, Barrels	1941, Barrels	Percent Over 1940
Western Fields:			
Lagunillas	58,464,785	66,277,491	13.5
Tia Juana	36,946,186	51,317,470	39.0
Cabimas*	19,324,559	22,855,803	18.2
Mene Grande	10,812,402	12,513,573	15.7
El Cubo	6,196,869	6,654,311	7.4
Cumarebo	1,630,785	2,073,202	27.0
Concepcion	839,308	1,198,872	43.0
Bachaquero	1,682,959	964,408	—43.0
	135,897,853	163,855,130	21.0
Eastern Fields:			
Quiriquire	21,676,451	18,636,310	—14.0
Oficina	15,414,106	24,491,383	59.0
Temblador	3,994,215	3,302,831	—17.0
Jusepin	3,995,154	7,192,387	80.0
Pedernales	1,795,888	1,586,267	—12.0
San Joaquin	1,097,562	2,873,925	162.0
El Roble	654,379	1,774,869	172.0
	48,627,755	59,857,972	23.0

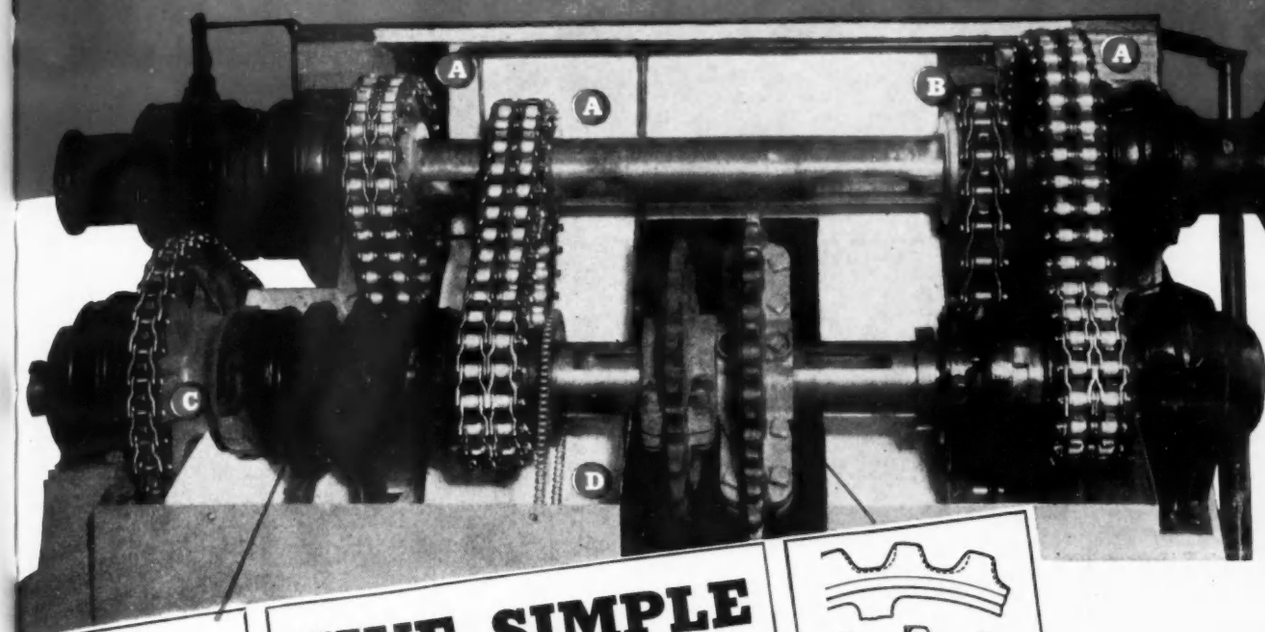
* La Rosa, Ambrosio, Punta Benites.

Exports of Venezuelan Crude Oil 1941

DESTINATION	Barrels*
Aruba	84,934,822
Curacao	69,941,732
United States	39,567,043
Canada	4,912,604
United Kingdom	2,151,783
Spain	1,406,262
Argentina	792,459
Uruguay	588,504
British West Indies	197,962
Union of South Africa	60,122
Cuba	34,605
	204,587,898

* Assumed conversion factors from original data in metric tons, 7.1 barrels per ton.

HOW TO MAKE CHAIN DRIVES LAST LONGER



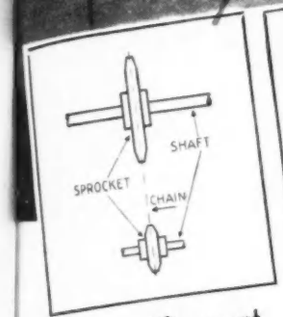
A LINK-BELT CHAIN FOR EVERY OIL FIELD SERVICE

A SS-3125 Hyper-Double Rotary Chain (API-3½). 230,000 lbs. ult. strength. Also made in Hyper-Single Chain, 115,000 lbs. ult. strength.

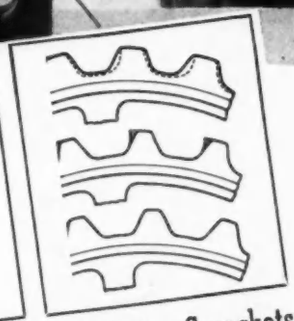
B SS-124 Self-Lubricating Three-Bar Hyper (API-4) Rotary Chain. 170,000 lbs. ult. strength.

C SS-40 Hyper (API-3) Rotary Chain. 75,000 lbs. ult. strength.

D Silverlink finished steel roller chain. Made in standard pitches, ⅜" to 2½" in single and multiple width types . . . 2,100 to 115,000 lbs. ult. strength.



FIVE SIMPLE THINGS TO DO . . .



Proper Alignment

Be sure that sprocket wheels are lined up on the shafts. If sprockets are not exactly in line, a side pull develops which concentrates the load on the sides of the sprocket teeth, and on one side of the chain. This faulty alignment results in excessive wear on both chains and sprockets.

Proper Adjustment

Chain should be run with just a little more slack than a belt. Too much tension causes undue wear on the chain and wasteful friction on the bearings. Not enough tension may allow the chain to jump the sprocket or ride the teeth, causing breakage.

Proper Lubrication

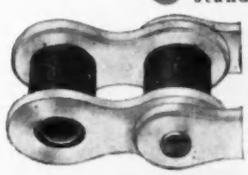
A forced-feed type lubrication system employing a small rotary type pump driven from a jack shaft of drawworks is ideal. A drip system is employed on a large number of rigs, and we suggest that oil should drip on the chain on inside (upper side of lower run) while chain is in operation. A good grade of lubricant should be used, viscosity to be determined by climatic conditions. Under no circumstances should drained oil from Diesel, gasoline or steam engines be re-used to lubricate chains. This oil is not capable of withstanding extreme high pressure bearing loads.

Well-Fitting Sprockets

Check sprocket wheels regularly to make sure they are not worn enough to damage chain. Wear (shown by dotted lines) that results in the hook (shown by shaded area) on driving side of sprocket can be removed by grinding the tooth. This will result in smoother chain action between chain and sprocket. If teeth are too badly worn, wheels should be replaced with accurately made and close fitting sprockets. Machine cut tooth sprockets are recommended; however, the above procedure may be followed for present day conditions where cast tooth sprockets are employed.

Post these suggestions in your tool house!

CLEANING . . . If rig is racked for a period of six months or more, chain should be removed from sprockets, thoroughly cleaned with gasoline, re-oiled and stored in a dust-proof compartment. When chain is again put back in service, it should be first cleaned and re-oiled.



API-3 Red-Hed Rotary Chain. 50,000 lbs. ult. strength.

API-4 Red-Hed Rotary Chain. 112,000 lbs. ult. strength.

API-4 Super Hyper Precision Rotary Chain. 175,000 lbs. ult. strength.

SS-124Two-Bar Hyper (API-4) Rotary Chain. 150,000 lbs. ult. strength.

SS-40 (API-3) Rotary Chain. 28,000 lbs. ult. strength.

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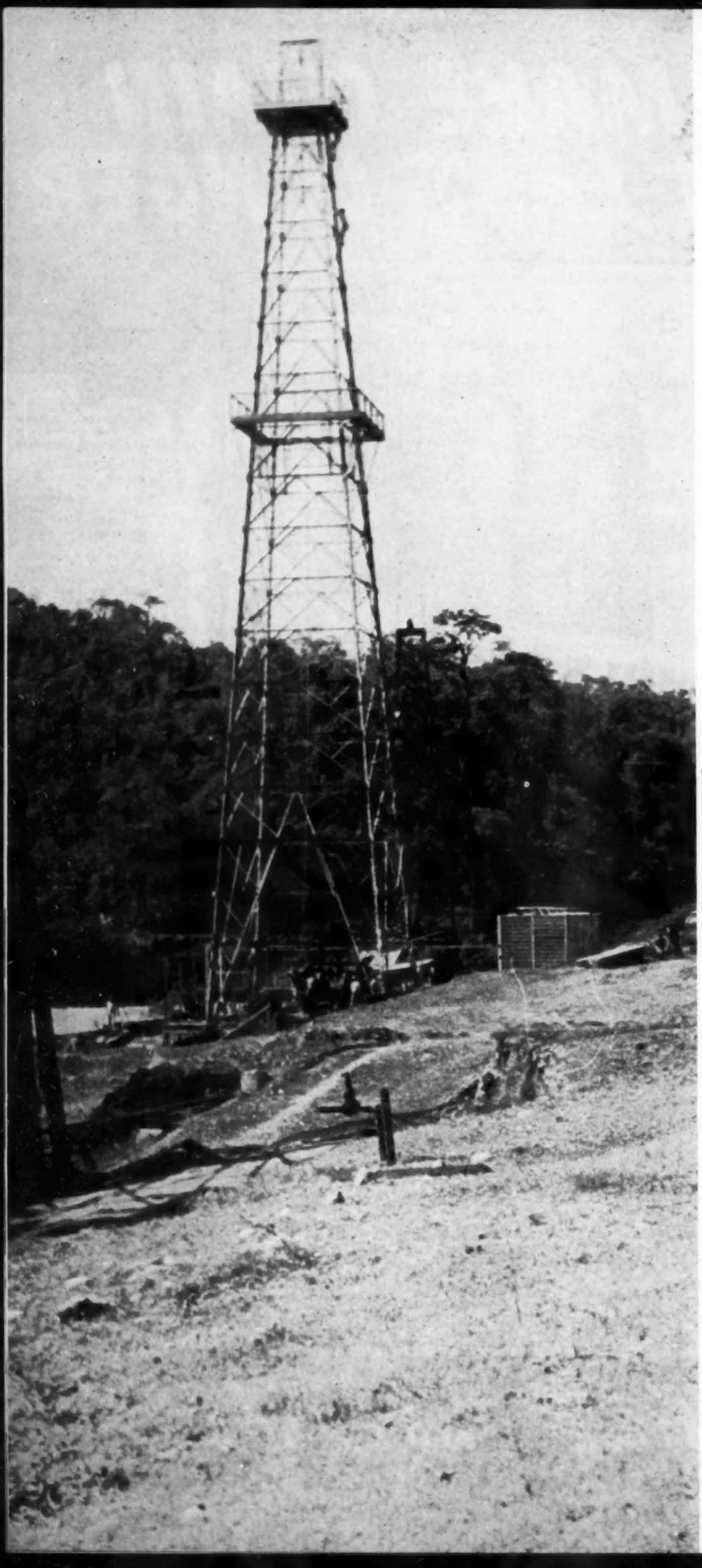


Argentina

By MARIO L. VILLA
Gerente General
Yacimientos Petroliferos Fiscales
Buenos Aires

PRODUCTION in Argentina last year totaled 22,013,472 barrels, a 6.8 percent increase over production of 20,609,129 barrels the previous year. The output of Yacimientos Petroliferos Fiscales (Y. P. F.), the government oil company, reached a new peak or 14,006,-563 barrels, which was 12.3 percent greater than the company's production of 12,474,624 barrels during 1940. The private companies' combined output last year was 8,006,909 barrels, a slight drop. In an accompanying table are shown production figures of the various companies operating in each district.

Chubut Fields Extended

The 740,529-barrel increase shown in the Comodoro Rivadavia (Chubut Territory) region followed from further

Argentina Production by Companies

Region and Company	1940 Production, Barrels	1941 Production, Barrels	Increase Over 1940, Barrels
Comodoro Rivadavia:			
Y. P. F.	8,469,730	9,137,697	+ 667,967
Diadema	4,203,833	4,235,227	+ 31,394
Ferrocarrilera	947,500	959,929	+ 12,429
Astra	898,118	923,234	+ 25,116
Industrial y Comercial	234,743	254,532	+ 19,789
Solano	222,358	206,192	— 16,166
	14,976,282	15,716,811	+ 740,529
Plaza Huincul:			
Y. P. F.	675,414	549,827	— 125,587
Compania La Republica	402,585	344,296	— 58,289
Standard Oil Co. of Argentina	197,437	177,114	— 20,323
	1,275,436	1,071,237	— 204,199
Mendoza:			
Y. P. F.	2,511,465	3,341,001	+ 829,536
Compania Rio Atuel	.....	3,210	+ 3,210
	2,511,465	3,344,211	+ 832,746
Salta:			
Y. P. F.	818,015	978,038	+ 160,023
Standard Oil Co. of Argentina	1,027,931	903,175	— 124,756
	1,845,946	1,881,213	+ 35,267
Total Argentina	20,609,129	22,013,472	+ 1,404,343
Total Y. P. F. Production	12,474,624	14,006,563	+ 1,531,939
Total Private Companies	8,134,505	8,006,909	— 127,596

Standard Oil Company of Argentina Well No. 10 in Agua Blanca field, Salta Province.

Extends Old Fields and Discovers New Areas

development in the proved areas and by the opening of the El Tordillo zone, which Y. P. F. began producing in the latter months of 1941. In Chubut Territory, Y. P. F. drilled a series of wells to extend the limits of the productive areas and drilled some wildcats to find new sands. One of these was S-145, located 9 miles south-southwest of the El Trebol field. Another was V-1, 14 miles north of the same field. Both were dry holes which found no oil in the productive horizons of the other fields.

Santa Cruz Wildcats Abandoned

Y. P. F. drilled three wildcats in Santa Cruz territory. One well, 0-2, 22 miles east-northeast of the town of Las Heras, went to 5125 feet and was abandoned. It entered the hard tufts of the Chubutiano, which lie below the productive zones of Comodoro Rivadavia. Another test, 0-8, in a faulted area 19 miles south-southwest of Comodoro Rivadavia, reached 5180 feet without encountering oil sands. The third dry hole was 0-9, a short distance from the coast and 80 miles south-southeast of Comodoro Rivadavia. This well encountered the Seri Porfiritica group at 990 feet, did not find the Chubutiano and was abandoned at 1335 feet.

In southern Santa Cruz Territory Ultramar Company drilled Piedro Clavada 1 about 125 miles west of the town of Santa Cruz and north of the Shehuen river. This test reached 4756 feet. Between 2640 and 2660 feet was encountered a gas flow with an initial daily production of 12,000,000 feet consisting of 93 percent carbon dioxide and under 940 pounds per square inch pressure. At 4230 feet the well entered into metamorphosed sediments probably of Paleozoic age and was abandoned after further drilling.

Neuquen Exploration Profitable

Of the exploratory wells drilled by Y.P.F. in Neuquen Territory, three were producers and two were abandoned. One producer, N.A.-4, considered the most important discovery in the Plaza Huincul region, was drilled, following seismograph studies, about 3 miles southeast of Challaco and 15 miles east-southeast of Plaza Huincul. Oil sands were found at 3220 feet, and after a penetration of 40 feet there the well yielded an initial production of 1071 barrels daily. Total depth was 3260 feet. In the Portezuelo zone, 19 miles west-southwest of Plaza Huincul, Y.P.F. drilled N.J.-1 and obtained oil, gas and water at 2730 feet in beds possibly located in the same stratigraphic position as those of Plaza Huincul. Drilling was continued to 3610 feet with the discovery of three important gas sands. An initial daily rate of 38 barrels of oil was secured. The third producer, N.L.-3, was drilled 9 miles west of Plaza Huincul on the same structure as N.L.-1 and N.L.-2, which were drilled in 1940, but 1.5 miles east of these, and obtained an initial production rate of over 100 barrels daily. Because of the high gas/oil ratio the well has been closed to avoid depletion.

One of the dry holes, N.C.N.-1, located 10 miles north-northeast of Zapala, was drilled to 5790 feet, reaching the upper sandstones of the Callovian. Oil shows were found in a number of horizons which were not productive because of low permeability. The other abandoned test, N.M.-1, 31 miles northwest of Plaza Huincul and about a mile west of the well drilled by Standard Oil Company of Argentina a few years ago, was drilled to 9125 feet, the second deepest well in the country. The well was abandoned in beds believed to be of Jurassic age.

Exploration was continued in the Senillosa zone with the drilling of

Argentina Production and Drilling Data

FIELDS	PRODUCTION DATA (Barrels)				DRILLING WELL DATA				PRODUCING WELL DATA AS OF JANUARY 1, 1942				
	Yearly Production		Daily Average Production *Jan. 1, 1942	Cumulative Production Thru 1941	Wells Drilling End 1941	Wells Drilled In 1941	Wells Drilled In 1940	Total Drilled All Years	Natural Flow	Pumping	Gas or Air Lift	Closed In	Abandoned
	During 1941	During 1940											
Comodoro Rivadavia (Chubut):													
Y. P. F.	9,137,697	8,469,730	26,758	117,200,073	20	174	145	2,867	13	1,831	....	178	492
Private Companies	6,579,114	6,506,552	19,222	86,092,872	15	125	118	2,145	4	1,173	....	249	598
Total	15,716,811	14,976,282	45,980	203,292,945	35	299	263	5,012	17	3,004	....	427	1,090
Plaza Huincul (Neuquen):													
Y. P. F.	549,827	675,414	1,900	7,506,548	5	16	13	406	10	156	....	80	114
Private Companies	521,410	600,002	1,214	10,195,430	1	10	7	194	15	89	....	13	82
Total	1,071,237	1,275,436	3,114	17,701,978	6	26	20	600	25	245	....	93	196
Salta Province:													
Y. P. F.	978,038	818,015	3,321	3,932,721	7	20	19	187	25	59	5	52	40
Private Companies	903,175	1,027,031	2,283	15,020,036	2	1	1	137	24	31	20	9	59
Total	1,881,213	1,845,946	5,604	18,952,757	9	21	20	324	49	90	25	61	99
Mendoza Province:													
Y. P. F.	3,341,001	2,511,465	9,907	7,053,007	9	18	10	114	24	27	....	8	42
Private Companies	3,210	.....	82	264,289	....	....	....	30	....	6	....	16	8
Total	3,344,211	2,511,465	9,989	7,317,296	9	18	10	144	24	33	....	24	50
Total Argentina	22,013,472	20,609,129	64,687	247,264,976	59	364	313	6,080	115	3,372	25	605	1,435
Total of Y. P. F.	14,006,563	12,474,624	41,886	135,692,349	41	228	187	3,574	72	2,073	5	318	688
Total of Private Companies	8,006,909	8,134,505	22,801	111,572,627	18	136	126	2,506	43	1,299	20	287	747

* January average.

Growth of Argentine Production in 1942

Region and Company	First 4 Months 1941 (Barrels)	First 4 Months 1942 (Barrels)
Comodoro Rivadavia:		
Y. P. F.	2,959,497	3,189,837
Diadema	1,286,226	1,528,592
Ferrocarriles*	480,115	490,529
Astra	306,079	282,854
	5,031,917	5,491,812
Plaza Huincul:		
Y. P. F.	184,821	278,037
Standard Oil Co. of Argentina	61,506	53,494
Compania La Republica	108,114	119,982
	354,441	451,513
Mendoza:		
Y. P. F.	1,045,270	1,127,989
Compania Rio Atuel	.....	9,710
	1,045,270	1,137,699
Salta:		
Y. P. F.	290,766	406,156
Standard Oil Co. of Argentina	314,475	281,596
	605,241	687,752
Total Argentina	7,036,869	7,768,776

* Includes Solano and Industrial and Commercial Companies

N.S.-4, 38 miles east of Plaza Huincul, to 5890 feet. This well encountered no shows in the Dogger horizon but got good indications in the lower Cretaceous.

Salta and Jujuy Drilling

In Salta Province Y.P.F. drilled a number of wells to extend the productive areas of the fields of Tranquitas and Rio Pescado and secured noteworthy results in this work. A dry hole, A.M.-4, was drilled to 4240 feet 2 miles north of the Rio Pescado field. The Ultramar Company drilled Cerro Lumbreras 1, 50 miles southeast of the city of Salta, to 1061 feet and abandoned.

In Jujuy Province the Ultramar Company also drilled another wildcat, Saladillo 2, at San Pedro de Jujuy to 4436 feet before abandoning it in Silurian beds.

Deepest Argentine Well in Mendoza

In Mendoza Province last year occurred a considerable increase in production. The output for the province totaled 3,344,211 barrels as compared with 2,511,465 barrels in 1940. Practically all the production came from Y.P.F. properties, since the 3210 barrels produced by Rio Atuel Company came from tests made at the close of the year on wells shut down for several years. The government company drilled wells in the fields of Tupungato, Lunlunta and Barrancas and extended the limits of these fields.

On the Carrizal structure 7 miles south-southeast of L-3, the discovery well of the Barrancas field, Y.P.F. drilled L.C.-1 to 9500 feet, the deepest well in Argentina. This test did not find oil in sands that are productive in the Lunlunta or Barrancas field, but shows were found at higher levels which have not been tested. A Y.P.F wildcat, T.R.-1, two miles northwest of the center of the Tupungato field, was drilled to 7380 feet and encountered oil in sands that are productive in that field. Production at the initial rate of 126 barrels per day was obtained. In southern Mendoza Province, Y.P.F. continued exploration on the Pampa Palau-Co and drilled P.P.-1, where dry gas was found in various beds of the upper and lower Cretaceous. A maximum production rate of 21,000,000 cubic feet per day was secured. The well also produced numerous shows of oil and some beds of the upper part of the Jurassic yielded small quantities of heavy oil.

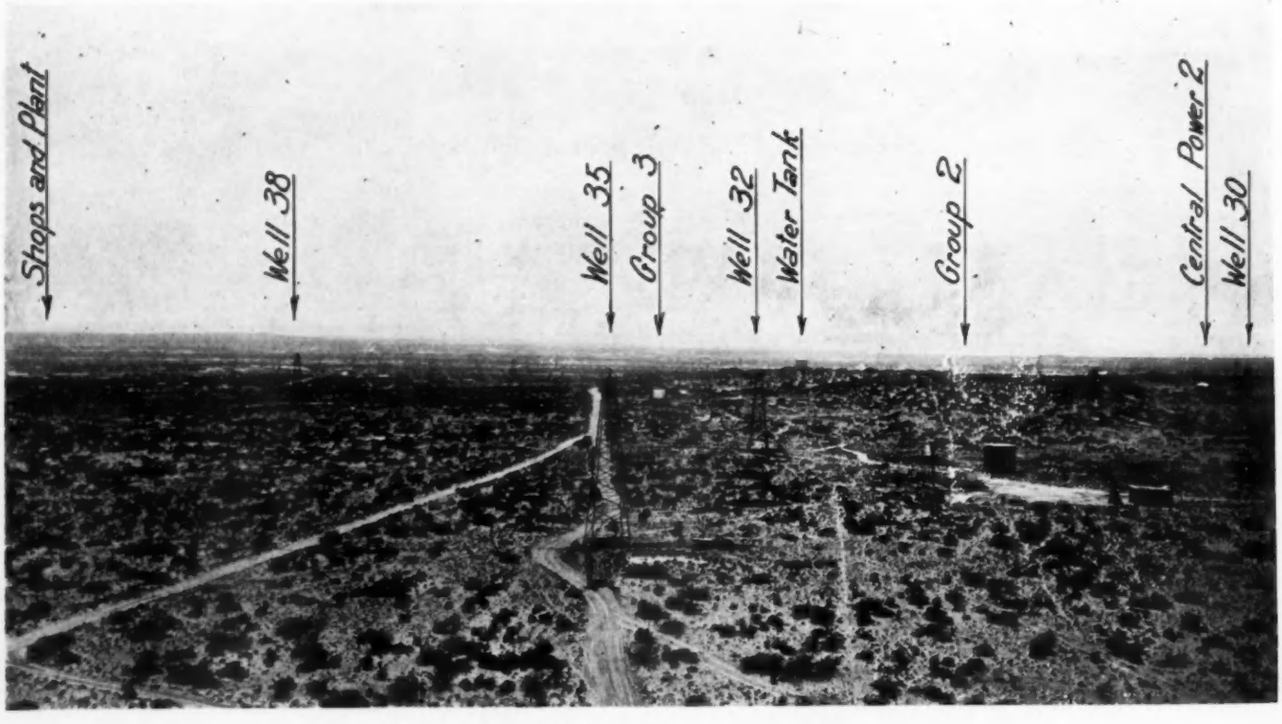
Developments in 1942

In the first 4 months of this year, Argentina produced 7,768,776 barrels of oil, a 10 percent increase over production in the same period of 1941. Of the 1942 total, Y.P.F. operations contributed 5,002,019 barrels and those of the private companies contributed 2,766,757 barrels.

In the Las Heras zone of Comodoro Rivadavia a dry hole, N-6, was drilled to 4130 feet, only non-commercial shows of oil and gas being encountered. Also in the same region were drilled several wells in a zone designated Puesto Quiroga, located south and southeast of the fields of El Trebol and El Trebol Oriental, to study structral features. Another exploratory well, Q-10, is being completed.

Wells N.A.-5 and N.A.-7 have been completed in the same productive sand as N.A.-4 at Plaza Huincul, with results confirming the importance of the Challaco zone. The two wells had an initial daily production rate of 755 barrels (N.A.-5) and 1258 barrels (N.A.-7) under natural flow.

In Salta Province, wildcat, A.M.-3, was abandoned at 5980 feet. Another test, R.S.-1, has been spudded 31 miles southwest of Tranquitas field, with no results thus far. Another test, H.E.-1, is drilling in Mendoza Province at a point 43 miles south of Barrancas field. This well is in the zone of Huayquerias del Este.



Eastern extension of Plaza Huincul field in Neuquen Territory, Argentina.

Germany's Oil Supply After Three Years of War

THE QUESTION . .

Uppermost in the minds of the leaders of the United Nations today is what is the supply of fuels and lubricants available to the German "Wehrmacht," "Luftwaffe," and "Seemacht" in their offensive campaigns this year?

THE ANSWER . . .

Nobody knows for sure but from certain indirect comments and a knowledge of German pre-war plans, the author of this article has developed some logical figures and deductions that have not reached print previously.

By MICHAEL LEWIS
New York, N. Y.

Mr. Lewis is an engineer, a native of Russia and was in charge of a munitions plant there during the previous war. He came to the United States in 1920 and has been in Germany several times, his last visit being three years ago.

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OF COURSE one cannot expect the German general staff to publish any figures as to the German fuel reserves or in respect to production capacity. In order to estimate Germany's output one has to use indirect quotations.

The current supply of the German "Wehrmacht," "Luftwaffe," and "Seemacht" with fuel oil can be divided into the following six sources:

1. Lignite (Braunkohle) and Stone Coal Liquefaction
2. Benzene (Benzol) Production
3. Pitcoal Tar-Oil
4. Alcohol Production
5. Native Crude Oil
6. Roumanian Supply.

Coal Liquefaction Plants

The ultimate goal of the German four-year plan for fuel-oil production, as known, was to reach a yearly capacity of 3½ million tons by fall of 1940. This goal was to attain self sufficiency and not only to cover the consumption of imported gasoline and gas oil, amounting to about 2,000,000 tons in 1936, but to step up production to serve the total consumption 75 percent higher than this amount. Later this goal was enlarged by a production capacity of hydrogenation and synthetic plants of 4,000,000 tons at the end of 1940.

By spring 1942 the goal of the four-year plan has been surpassed by 50 percent and will have reached approximately 6,000,000 tons per year, and it can be estimated that the yearly production has increased at least 2,000,000 tons during the last 1½ years.

Coal-liquefaction plants may be divided into three groups as follows:

A. Carbonization plants, which produce lignite tar, light oil and semi-coke.

The principal designation of carbonization plants is the weekly production of approximately 30,000 tons of tar for hydrogenation plants (I. G. Farben process) and approximately 160,000 tons of semi-coke weekly for synthetic plants (Fischer-Tropsch process).

The exploitation of semi-coke was still a problem when Hitler came into power. A fact which, by the grace of Providence, delayed the entire fuel-oil development of Germany. Only after the Fischer synthesis had been developed into production, the exploitation of semi-coke gained its great importance. In the beginning semi-coke was used to be burned in electric plants. Thus the synthetic plants found in semi-coke an already prepared basic product and all they had to do was substitute this semi-coke with raw browncoal (lignite) for burning in the electric plants.

For the permanent direct supply the lignite carbonization plants produce only approximately 2000 tons of light oil (gas benzene) weekly. Of course, this light oil must be purified, and after deducting a loss in distillation, two products are gained: heavy gasoline and gas oil. Yet this light oil is only a supplementary by-product.

B. The second group includes the hydrogenation and synthetic plants which further develop the tar and semi-coke, as well as raw braunkohle and braunkohle bricketts.

The total weekly production capacity of all these plants will have reached an amount of 70,000 to 75,000 tons in spring 1942, according to the estimation in the "Index of Germany's Coal Liquefaction Plants."

C. The third group includes the plants which use stone coal as the basic product. The total weekly production capacity of all these plants will have reached 36,000 to 40,000 tons in spring 1942, as is estimated in the same "Index."

In summary, it may be estimated that sections A, B, and C will have reached a weekly production of from 108,000 to 117,000 tons by spring of 1942.

It must be emphasized here that the quality of the fuel oil produced by the I. G. Farben process is of a higher standard than the fuel oil produced by the Fischer process. The difference lies in the diversity of the structure of carbon-hydrogen. However, the quality of the Fischer process products can be enhanced through a special process, but the low temperatures have no influence upon the quality of both products.

Benzene (Benzol) Production

Benzene is a by-product in the process of stone-coal coking and its production depends on the factors of coke and gas production. Since the war started the gas production diminished, but the coke production grew enormously. In 1938, 45,500,000 tons of mine coke were produced. In the following war years the estimated output was approximately 70,000,000 tons of coke. Because of shortage of all kinds of coal, inferior coals had to be used for coking, and therefore the exploit of benzene was relatively lower than during the prewar years. However, an output of 750,000 tons yearly, or 15,000 tons weekly can be assumed. To this figure should be added the benzene production of the occupied countries which amounts to 150,000 tons yearly, or 3000 tons weekly. The entire benzene output for fuel purposes in spring 1942 can be estimated to be about 18,000 tons weekly, which is the same average attained in 1941.

However, the mixture of gasoline benzol which the Germans frequently use, produces crystal formations at a temperature of 5° F. and these benzol (benzene) crystals dissolve as soon as they are brought into the warmed up motor.

Pitcoal Tar—Oil

Stone-coal tar is a by-product of stone-coal coking and grew in proportion to the production of coke. In spring 1942, it is estimated that the stone-coal tar production will have reached an estimated 3,150,000 tons. The occupied countries are producing about 850,000 tons. After the distillation of these 4,000,000 tons three kinds of products are gained: light oil, middle oil, and heavy oil, amounting to 20 percent of the initial material, namely 800,000 tons. These are used pure as diesel fuel, or as a mixture with kokasine, or other highly inflammable products. Heavy tar oil is being used for industry furnaces and as bunker oil for the "Seemacht." The weekly production of all kinds of tar oil can be estimated at 16,000 tons which is equal to the previous year.

Alcohol

In 1939, 225,000 to 250,000 tons of alcohol were used for mixing with gasoline and benzene. In 1940 and 1941 the production of domestic distilleries could not be further enlarged on account of scarcity of grain and potatoes, but the Germans are using French and Spanish wines for distilling purposes. It is also a certainty that the Germans are using sugar beets and molasses in the Protectorat's and France's distilleries and we can estimate that the Germans are using, as during the last year, a weekly total of 10,000 tons of alcohol for mixing with gasoline and benzene, although their need of alcohol in the explosive plants is very large.

Native Crude Oil

As outlined in the four years' "Fuel-Oil Plan" the native crude oil production was intended as a basis for lubricating oil production. In the press there appeared the following statement on the crude-oil output in middle Europe for the year 1941: Old Reich 634,584 tons, Ostmark 103,195 tons, Slovakia and Moravia 16,078 tons, Poland 447,352 tons, Pechelbronn 67,124 tons, a total for Middle Europe of 1,268,333 tons in 1941, or about 24,500 tons weekly, against 1,376,033 tons, or about 26,500 tons weekly in 1940. But these figures diminish the real output and must be taken with caution.

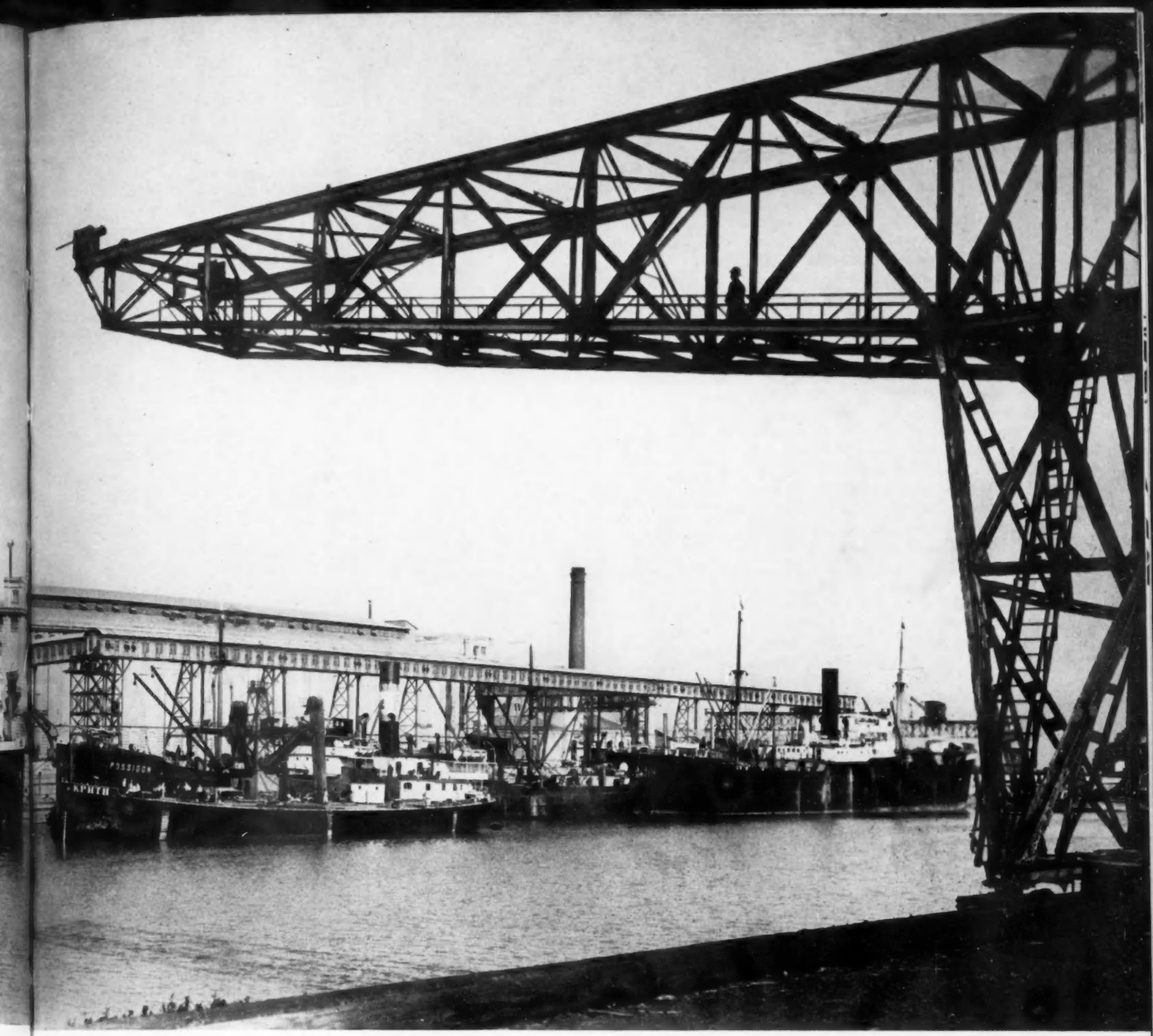
A part of this diminution was caused by the decrease of Poland's output during the first month after the Russian retreat in summer 1941. But, during the first weeks of their retreat the Russians did not yet use their "scorched earth" policy and the Broislaw and Stanislaw oil wells fell into German hands almost intact. These wells had yielded 371,000 tons in 1938. It must be estimated that up to spring 1942 these territories, together with the Yaslo territory, since 1939 in Germany's possession, produce, as in 1939 or 1940, 522,874 and 520,984 tons, or at least 10,000 to 11,000 tons weekly. All together, it can be assumed that the Middle European output now reaches 30,000 to 33,000 tons of crude oil weekly. After distillation and other processes the Germans have 22,000 to 24,000 tons of all kinds of fuel oil. The remainder, after deduction for loss, forms the basis for lubricating-oil production.

Roumanian Supply

The Roumanian crude oil production was 6,240,000 tons in 1939. In 1940 the production declined steadily and was only 5,800,000 tons. In 1941 the Germans took over the control of crude oil production and changed the entire production set-up in accordance with their war requirements. However, it is very difficult to presume that the Germans' control could increase the output of the oil wells. Now an output of 105,000 tons

weekly, or 5,460,000 tons yearly can be assumed, although other estimates put the 1941 output between 5,200,000 and 5,500,000 tons.

According to "Moniteur du Petrol Roumain," the production of the Roumanian refining industry for the first half of 1941 was 2,418,000 tons of derivatives, including residual oil, or 93,000 tons weekly. It can be assumed that according to the weekly crude oil output of 105,000 tons the Germans are able to produce in the Roumanian refineries 65,000 tons of all kinds of fuel oil, and 35,000 tons residual oil. However, not all production can be confiscated for the Eastern front as the Roumanian consumption is very considerable and during the past year reached 1,800,000 tons, or 35,000 tons weekly. Since the beginning of 1941 you can find in the German



—Photo from Three Lions

It is indicated that Roumania is supplying about 58,000 tons of fuel oil and 7000 tons of lubricants per week to the Axis war fronts. Much of this oil moves on the Danube River in freighters, several of which are shown in this picture at the port of Braila, Roumania.

press demands to cut the Roumanian fuel oil consumption considerably and to put it on the basis of other Balkan states. Half of the Roumanian consumption, 900,000 tons yearly of residual oil, was used for the Roumanian railroads. If the Germans are able to supply the railways with coal and to exchange the 3600 Roumanian locomotives with the requisitioned French locomotives, they will be able to cut the Roumanian fuel oil consumption to 15,000-20,000 tons weekly, instead of 35,000 tons of the past years. (It is well known that about 300,000 of France's railroad cars and about 11,000 locomotives, approximately 60 percent of the entire stock, and the very best of it, were requisitioned by Germany for use in the East.)

From the actual production of fuel oil must be deducted the quantities which had to be exported to Bulgaria and Italy, 10,000 tons weekly, and 5000 tons weekly for France, Switzerland, Slovakia, and Sweden. The export to the last four countries can be curtailed, but the deliveries to Italy had to be made for the Italian fleet and air force as well as for the Italian armies in Libya.

After deducting the Roumanian consumption of 15,000 to 20,000 tons weekly, and the export of 15,000 tons weekly, the balance of 55,000 to 58,000 tons of fuel oil and 7000 tons of lubricants can be supplied to the entire war front per week.

Summarized, it can be estimated that the fuel oil production of Germany in spring 1942 reached a weekly total of approximately 240,000 tons, subdivided into the following sources:

	Tons
1. Lignite and coal liquefaction	115,000
2. Benzene (benzol) production	18,000
3. Coal tar distillation	16,000
4. Alcohol mixture with oil	10,000
5. Native and Polish fuel oil	23,000
6. Roumanian supply	58,000

From all these sources the Germans could draw, for this year's offensive, a weekly supply of approximately 240,000 tons. In comparison hereto, at the beginning of the war in 1939, Ger-

many had only a weekly supply of approximately 120,000 tons, and at the beginning of the Russian campaign they had a weekly supply of 190,000 tons.

Reserves

Germany's fuel oil reserves at the outbreak of the war may have been near 7,000,000 tons and large enough to cover the entire German peace consumption for 1½ years. The requisitioned Norwegian, Dutch, Belgian, and French reserves together with the favorable balance of production over consumption and the steady flow of imports from Roumania and Russia filled the German reserve fund and increased it from 7,000,000 tons in fall 1939 to about 10,000,000 tons in summer 1941. This gave the German general staff a false security and a conviction that these fuel reserves would be sufficient to defeat Russia.

How important the matter of fuel tank storage was to the Germans can be seen from the following example: The Germans built the tank reservoir of Ostermoor near Wilhelmkanal with a capacity of 600,000 tons of fuel oil and consisting of more than 30 tanks with a capacity of 20,000 ccm on moor ground and under staggering expenses. But in spite of such an enormous construction the Germans rented tankage in Roumania. It is well known that the total tankage capacity of Roumania amounted to 3,200,000 tons, 3,108,769 tons of which were used in the beginning of 1941. It was already a general practice to store fuel oil in tank cars, which were parked in various depots. At that time the total stock of Roumanian fuel oil amounted to only 807,421 tons. It was quite evident, therefore, that the owner of more than 2,200,000 tons of fuel oil could be nobody else but Germany, and it can be assumed that most of this fuel oil, if not all of it, was of Russian origin. This enormous reserve was stored in Roumania, first, because Germany had neither transportation facilities nor enough tank storage in its own frontiers, and, second, Germany needed them on the future nearby battle fronts.

Russian fuel oil from the Roumanian storage tanks was used for the attack on Russia.

After Roumania entered the war as Germany's satellite, the Germans took complete control, not only over the Roumanian crude-oil and refining industry, but over all Roumanian fuel-oil stocks. By March 31 the refinery stocks reached 877,486 tons, and the stocks at the export points 216,616 tons, together 1,094,102 of fuel oil. To this quantity must be added the Roumanian railroad reserve and the fuel oil stocks which are held by the distributors. It can therefore be assumed that in consequence of this fact the Germans' own reserve of approximately 10,000,000 tons received a supplement of approximately 1,500,000 tons and up to the start of the Russian campaign the common German-Roumanian reserve reached an enormous volume, namely 11,500,000 tons of fuel oil.

During the 23 weeks of the summer and fall Russian campaign, vehicles used by the attacking armies, the subsidiary troops, and for supply transportation had reached 650,000 to 750,000 units, and the total of fuel oil consumption of the "Wehrmacht" and "Luftwaffe" reached a weekly average of 450,000 tons, or a total of 10,250,000 tons for 23 weeks.

To the quantities of fuel oil used on the East front we must add the home consumption, by the "Luftwaffe"—training camps, the "Wehrmacht" and "Luftwaffe" in the occupied countries, including the Finnish and Libyan fronts and the "Seemacht" with its submarines. In summary, the consumption of all these forces can be estimated to be at least 100,000 tons. Therefore, the total fuel-oil consumption of Germany is rising to approximately 550,000 tons weekly, or 12,500,000 tons of all kinds of fuel oil during the 23 weeks of the Russian summer and fall campaigns.

As mentioned previously, the permanent weekly production during the first 23 weeks of the East campaign had reached an average of approximately 190,000 tons. The remaining 360,000 tons of fuel oil had to be taken from the fuel oil reserve fund. Thus the German-Roumanian reserves of 11,500,000 tons of fuel oil at the start of the Russian attack were reduced approximately 8,250,000 tons and at the start of the winter campaign 1941/1942 the reserve fund contained no more than 3,250,000 tons. The German high command can already see the bottom in its reserve fund, but its goal of defeating Russia is still quite far away.

A principal reason for Hitler's announcement that he would suspend military activities on the Eastern front during the winter was to enable him to accumulate new reserves of fuel oil and to diminish his motorized forces by substituting old-fashioned horse-power for all purposes throughout the winter. During fall 1941 the Germans requisitioned horses at home and in all occupied countries. Then, as snow permanently covered the Russian roads the Germans used the Russian sleds for the greater part of transportation in an effort to check oil consumption.

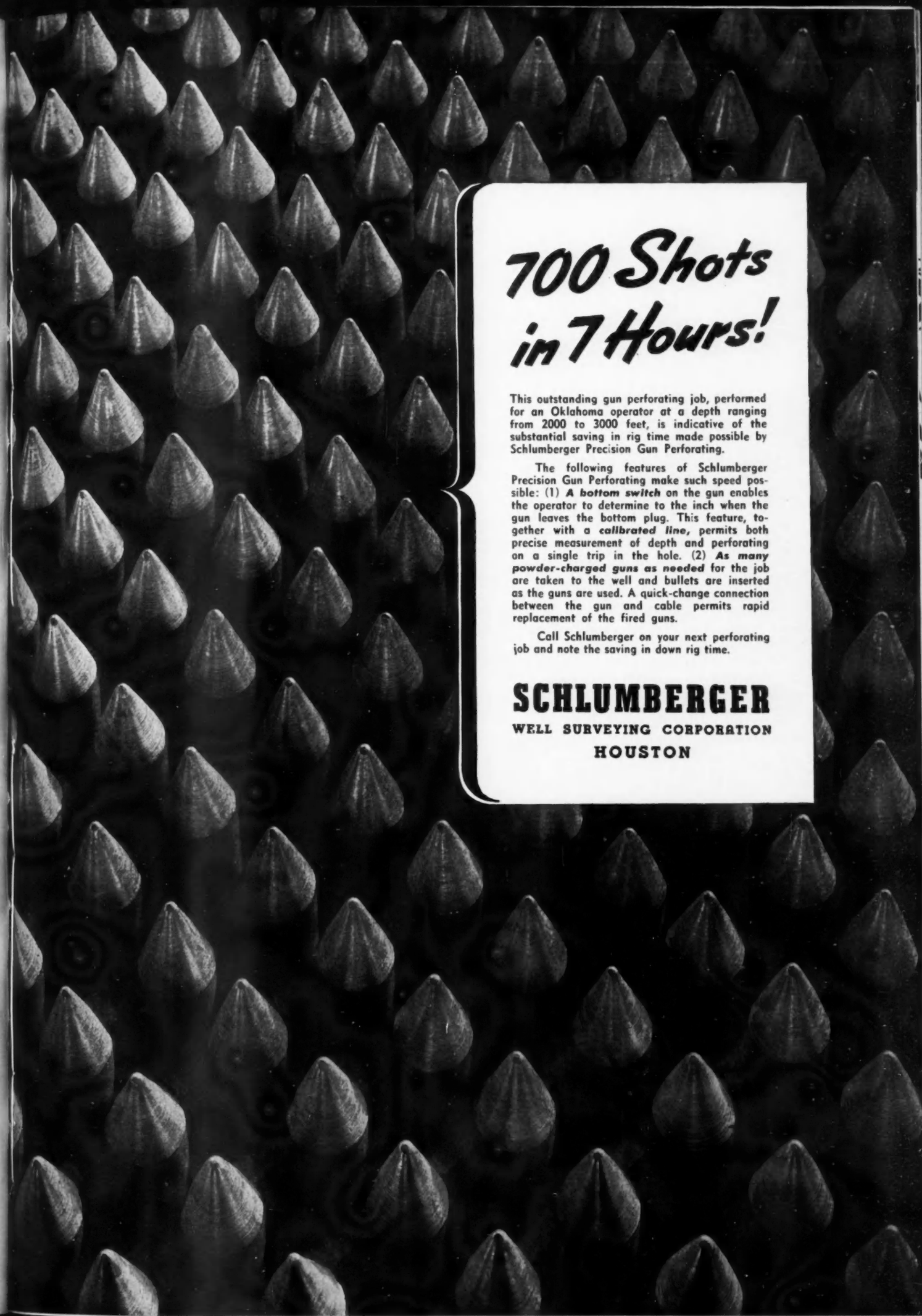
The war started in "blitzkrieg" fashion and in the third winter turned into a "horse-blitzkrieg." The good old-fashioned "oat-motors" would save fuel oil and permit the Germans to fill their considerably shrunk reserve fund. These plans have been upset by the prolongation of the intensified Russian offensives which have forced Germany to use the current winter production of fuel oil instead of preserving it. In order not to be surprised by the Russians the Germans had to keep warm and ready to run a considerable number of motors. It was not a small amount of fuel oil which had to be used just in order to prevent the lubricants in the motors from thickening and to maintain the vehicles' mobility in case of Russian attacks. However, it is to be assumed that consequent saving of fuel oil during the 17 weeks of the winter campaign has given Germany the possibility to get along with the current production, and even to refill their reserve with small quantities. Assuming that the consumption on the East front was reduced to 100,000 tons weekly (to almost a quarter), and the consumption at home and in the occupied countries maintained the previously estimated figure of 100,000 tons weekly, it is to be concluded that this consumption of 200,000 tons weekly can be covered by the current fuel-oil production. As the production of fuel oil will probably increase to 240,000 tons weekly by spring 1942, we must assume that Germany succeeded in increasing her reserve of 3,250,000 tons at the beginning of the winter campaign by 500,000 to 750,000 and to bring it up to 3,750,000 to 4,000,000 tons at the beginning of the spring campaign 1942.

Now, the reserve being only a third of that of summer 1941, its use must be closely calculated. With the experience of the French campaign the Germans must keep a permanent reserve of at least 1,000,000 tons of fuel oil in the countries occupied in the West. In addition to this there must be kept a permanent reserve at the East front. Another few hundred thousand tons of fuel oil have to be deducted because these quantities keep moving. After these deductions Germany retains for its spring drive on the Eastern front a reserve of approximately 2,000,000 tons only. Evidently, this reserve together with the current production are not sufficient to repeat as broad an offensive as the fall offensive from the Finnish Gulf to the Black Sea and as announced by Hitler on October 3, 1941.

Germany's Lubricating Production

The German problem of production of lubricating oil is basically as follows:

A. As outlined in the 4-year "fuel-oil plan" the native crude oil production was intended as a basis for lubricating-oil production. The crude-oil production of Greater Germany, including Austria, the Protectorat (former Czecho-Slo-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vakia) and Pechelbronn surpasses now a weekly total of 20,000 tons and to this amount is to be added the Polish production of at least 10,000 tons weekly. This adds up to a total output of 30,000 to 33,000 tons of crude oil per week which forms the basis of approximately 6000 to 7000 tons of lubricating oil of various qualities and approximately 22,000 to 24,000 tons of all kinds of fuel oil. At least one third of the Middle European crude oil can be used to produce a high-grade quality of lubricants. An especially good quality of lubricants is made from some paraffin-containing Polish and German crude oils.

B. It is well known that long before the outbreak of this war, at times of free trade relations, the Germans used to regenerate used oil. In 1934 Germany regenerated 4500 tons, in 1935, 7200 tons and in 1936, 13,200 tons of oil. The regeneration of used oil developed rapidly for two reasons, first, the quality of these regenerated oils was under no circumstances inferior, and second, this process opened an additional supply source in case of war. It can be assumed that, at present, Germany regenerates more than 2000 tons of used lubricating oil per week.

C. After confiscating and taking "complete control" over the Roumanian crude oil and refinery industry, the Germans set the entire production schedule of this country on a wartime basis. They doubled their efforts to obtain the maximum of lubricants from this crude oil which, as is well known, is not fit for production of high-grade lubricants. This was nothing new for Germany, because she used Roumanian crude oil for lubricating oil during the first World War. At that time, the Germans' plants had to wait three quarters of a year until they could get the first raw product. Now, the situation is entirely different. In 1938 the Roumanian oil producers not only covered considerable consumption of Roumanian lubricating oil, but in spite of world competition exported 68,000 tons of medium-grade lubricating oil. In war times world-market prices and high expenses play only a secondary role, and only one fact is important, namely, that "a low-grade lubricating oil is better than no oil at all." By "rationalizing" as the Germans call it, i.e., reorganizing the Roumanian oil production with their methods of "specialized and interlocking process," the Germans are able to produce not only in Roumania but also in the Reich itself great quantities of lubricating oil, and this production seems to reach a total of approximately 6000 to 7000 tons weekly. In contrast to the earlier and older methods which were used during and after the first World War the Germans now are using the newest and most modern American methods and solvents in their production. All the sources, outlined in paragraphs A, B, and C produce a weekly total of approximately 14,000 to 16,000 tons of lubricating oil, of various qualities.

According to statements, 1,152,000 tons of oil products passed through the Roumanian Danube port of Giurgui in 1941 and an additional 61,000 tons through other Danube ports, making a total of 1,213,000 tons. In previous years gasoline and gas oil passed via this way into Germany, but what kind of products were shipped in 1941? In the early part of 1941 Germany prepared her attack on Jugoslavia and Greece and stocked Roumanian and Russian oil products in Roumania in order to send them directly to the nearby fronts, instead of into Germany. Shortly after the end of the Jugoslavian, Greek and Crete campaign, the attack on Russia was staged. Once again Germany changed the transport direction of Roumanian fuel oils. It is clear that Germany did not need these oil supplies in the Reich itself, but needed them vitally on the battle front where these supplies were sent in tank cars, drums and trucks. This fact is substantiated by the doubling of the overland-route—export of Roumanian oil. However, if it is true that 1,200,000 tons of oil were exported via the Danube route, it must be assumed that the heavy transport of 1,000,000 tons which was sent into the Reich, was neither gasoline nor gas oil, but consisted of raw and half-finished products which were sent there to be turned into lubricants. The balance could consist of gasoline and gas oil for France, Switzerland, Slovakia and Sweden.

D. A great source of lubricating oil was in reserve before the war started. Other sources were requisitioned and confiscated quantities, taken from the occupied territories. Also quantities were imported in spite of the blockade. The Russian oil deliveries also helped enormously to boost this German reserve fund. According to information, an oil tanker used to commute regularly between Batum and Roumanian ports, carrying about 9000 tons of oil every two weeks. This would amount to the considerable item of 300,000 to 400,000 tons from fall 1939 to summer 1941. The total amount of all these sources can be estimated at around 1½ million tons.

E. There remains finally the production of lubricating oil won from liquefication plants. Five or six years ago certain German authorities (Dr. Pier, Prof. Fischer, etc.) announced that lubricating oil could also be produced in the lignite- and coal-liquefication plants. Special departments were installed in many of these plants, but it can safely be assumed that during the first war year only small unimportant quantities of such lubricants were produced there. It may be possible that certain technical difficulties had to be overcome first. It is difficult to say how this matter developed during the past year and a half.

It must be emphasized, however, that the weekly output of 30,000 tons of lignite carbonization tar contains 400 to 500 tons of lubricants and 1000 tons of paraffin. It does not seem possible that the Germans would not separate these valuable derivatives before hydrogenation, and that they thus would abandon an additional yearly supply of 20,000 tons of lubricants and 50,000 tons of paraffin.

Consumption of Lubricants

In pre-war times the railways of the Old Reich had a yearly consumption of 70,000 tons of lubricants and grease. Now, the number of locomotives and cars used by the Germans has been doubled. The loads and distances have increased as well. Consequently, it may be assumed that the consumption of the German railways, and the railways controlled by Germany, now amounts to at least 150,000 tons yearly. The industrial and other consumers needed in pre-war times an amount of 350,000 tons of lubricating oils and greases yearly. Now the consumption of industry in Germany and in German occupied countries which produce for the German war machine must be estimated at 450,000 tons of lubricants and grease yearly.

The needs of the Wehrmacht, Luftwaffe and Seemacht may be estimated as a fraction of their fuel-oil consumption. We may estimate that all the mentioned units used approximately 4,000,000 tons of fuel oil in the first half of 1941, and 14,000,000 tons in the second half of 1941, together about 18,000,000 tons of fuel oil during the entire year of 1941. If we assume that the consumption of lubricants for motors and for greasing is 4 percent of the fuel oil consumption, the military consumption of lubricants for the year 1941 must be assumed to have been approximately 700,000 tons.

This amounts to a total German consumption of 1,300,000 tons of lubricants and grease of various qualities for the year 1941, or a weekly average of 25,000 tons.

The production of lubricants from crude oil and regeneration could cover 15,000 tons weekly consumption. The missing quantity had to be taken from the reserves. An unknown part has been covered by the production of substitute lubricants on the lignite and coal basis.

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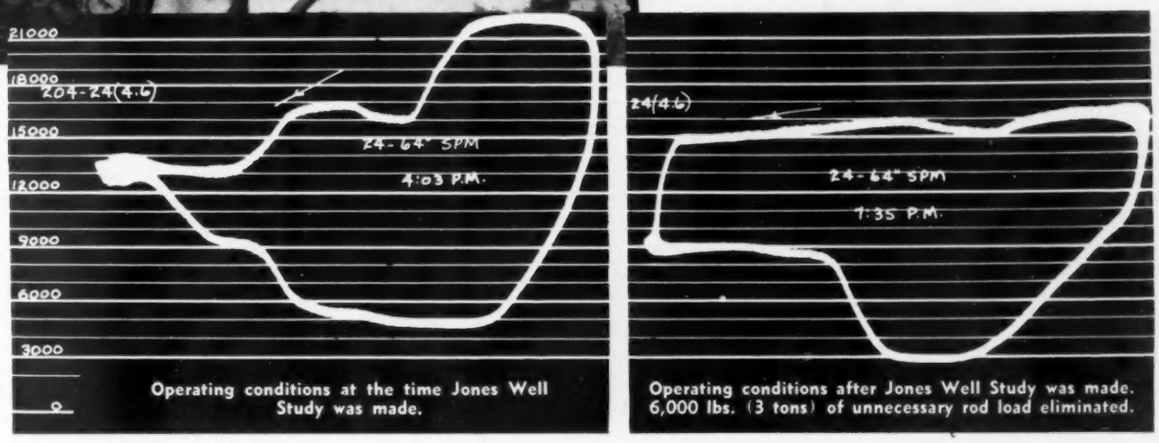

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Rumanian Oil Situation Deteriorates

By E. A. BELL, Special Correspondent

OFFICIAL figures from Rumanian sources show that the dominant note in oil developments in Rumania last year was one of steady contraction throughout the industry from production to marketing. The extent to which Rumania's crude oil output has dropped in recent years under effects of repressive national policies, war and German infiltration is seen in the following yearly production figures:

Rumanian Yearly Production

Year	Barrels[1]
1936	[2]60,950,000
1937	50,000,000
1938	46,200,000
1939	43,720,000
1940	40,250,000
1941	[3]36,400,000

[1] Original data converted on basis of 7.0 barrels per metric ton.
[2] Year of peak production.
[3] Preliminary.

Production Slumps

A sharp drop in drilling occurred. From the record footage of 1,293,960 feet established in 1937, the footage in 1940 dropped to 784,776, and last year it is estimated that drilling totaled only 760,960 feet. Formerly, certain quarters on the Continent blamed the decline in Rumania's drilling activity on foreign oil companies, but that this attitude misrepresented the true situation is shown by the fact that under present circumstances, when those companies are no longer influential, drilling continues to drop. The true situation seems to be exhaustion of the fields at the level usually worked, as well as political strife which was and is injuring the country's economic life.

Of the four Rumanian oil regions, Dambovitsa, Prahova, Buzau and Bacau, the first-named formerly was the most productive. Annual production in that field (metric tons converted on basis of 7 barrels per ton) was 24,530,000 barrels in 1932, rose to a maximum of 35,000,000 barrels in 1936, fell off to 23,100,000 barrels in 1937 and probably declined to 11,900,000 barrels last year. Production in the Prahova zone, 27.9 miles north of Bucharest, was 25,200,000 barrels in 1932, rose to 27,300,000 barrels in 1939 (peak production year) and is estimated to have declined to 23,800,000 barrels in 1941.

The Buzau and Bacau zones are of relatively slight importance. The Buzau fields, 79.5 miles northeast of Bucharest, produced 451,000 barrels in 1932 and probably dropped to 280,000 barrels last year. Bacau, farther to the north and 188 miles from Bucharest, shows a more pronounced decline from 424,300 barrels in 1932 to 245,000 barrels in 1941.

New fields being developed under German pressure are insignificant for the time being.

Refining Throughput Drops

Rumania's combined refining capacity is estimated as 70,000,000 barrels throughput yearly. The average annual crude throughput during the period of 1934-1936, however, did not exceed 56,000,000 barrels. In 1932 the throughput was 49,000,000 barrels. It dropped in 1937 to 46,200,000 barrels, and last year's figure is expected at best as only 33,600,000 barrels.

The accompanying tabulation compares preliminary refining production last year with the figures of 10 years ago:

Rumanian Refinery Runs

PRODUCT	1932 Metric Tons	1941 Metric Tons
Light gasoline	1,100,000	1,100,000
White spirit	133,151	207,000
Heavy gasoline	458,383	211,000
Kerosine	1,000,000	665,000
Gas oil	1,000,000	690,000
Residuum	2,300,000	1,700,000
Asphalt	38,547	51,000
	6,030,081	4,624,000

Reports from Europe concerning damages sustained by Rumania's oil industry from Russian bombers are contradictory. Russian sources say that about 1,000,000 tons (about 7,000,000 barrels) of oil have been destroyed in raids, but whether the destroyed oil was crude or products is unclear. All reports agree that the Unirea refinery (formerly British controlled) at Ploesti was destroyed. Some reports indicate damage to the German-controlled Petrol Block organization.

Rumanian Exports Decline

Despite efforts of the Axis, exports of oil from Rumania have slumped. Total exports rose from 35,700,000 barrels in 1932 to 47,500,000 barrels in 1936. They dropped to 24,500,000 barrels in 1940 and are estimated to total only 21,700,000 barrels last year. The accompanying table shows exports of Rumanian crude oil and refined products for the last three years, data for 1941 being considered as good estimates. Data to convert tons to barrels are not available, but the figures show extent of the decline over the three-year period.

Rumanian Exports

PRODUCT	Metric Tons 1939	1940	1941[1]
Gasoline	1,595,341	1,333,500	1,281,000
Kerosine, white spirit	793,523	623,719	530,000
Gas oil	626,041	664,699	600,000
Fuel oil	770,202	521,098	300,000
Lubricants	41,247	34,097	38,000
Asphalt	15,495	8,591	18,000
Paraffin	6,548	6,682	11,000
Crude oil	329,168	300,414	300,000
Other products	6	137	22,000
	4,177,571	3,492,937	3,100,000

[1] Close estimates.

There has been a striking and significant increase in exports of German-controlled companies, such as Petrol Block, Concordia and Sardep. Likewise of significance is a fall in exports of the Prahova company, which is (or has been) controlled by the Italian company, Azienda Gerenale Italiana Petroli.

War has snatched from Constanta that port's once dominant position in Rumanian export trade because of the British blockade in the Mediterranean. On the Danube, the main export point is Giurgiu, which, like Constanta, is fed from the oil fields by two pipe lines. During 1939 and 1940 exports from Giurgiu averaged around 8,400,000 barrels, but because of the heavy winter of 1941, exports from Giurgiu last year are estimated to have dropped. Several smaller Danube ports have had fluctuating success in efforts to contribute to exports down the river.

A strenuous effort increased exports from these points during 1940 but it is estimated their shipments materially fell off last year. Special efforts have been made to use railroads to carry oil to Germany and her satellite states as well as to certain neutral countries, such as Sweden and Switzerland. The following tabulation shows how the overland routes have materially increased their share of the total export industry, al-

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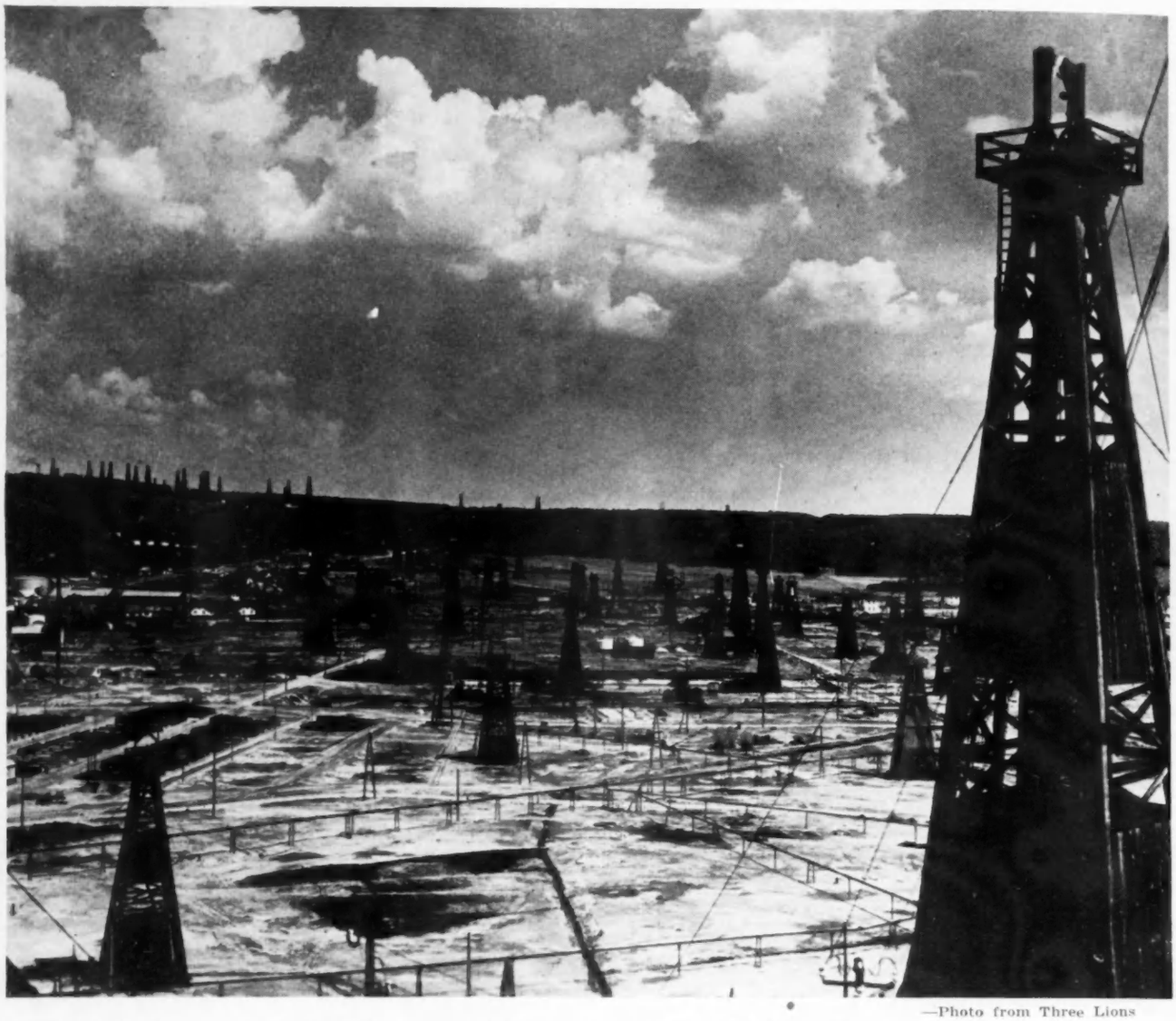


—Photo from Three Lions

Typical of Rumanian oil operations before the war is this picture of the oil fields near Ploesti with their enclosed wooden derricks.

though exports in the aggregate have declined.

Routes of Rumanian Exports, Barrels[1]

ROUTE	1931	1940	1941[2]
Constanta	19,290,000	10,030,000	3,290,000
Giurgiu	8,420,000	8,710,000	8,060,000
Other Danube ports	246,800	1,278,000	427,000
Overland routes	1,263,000	4,424,000	9,217,000
	29,219,800	24,442,000	20,994,000

[1] On basis 7.0 barrels per metric ton.
[2] Estimated.

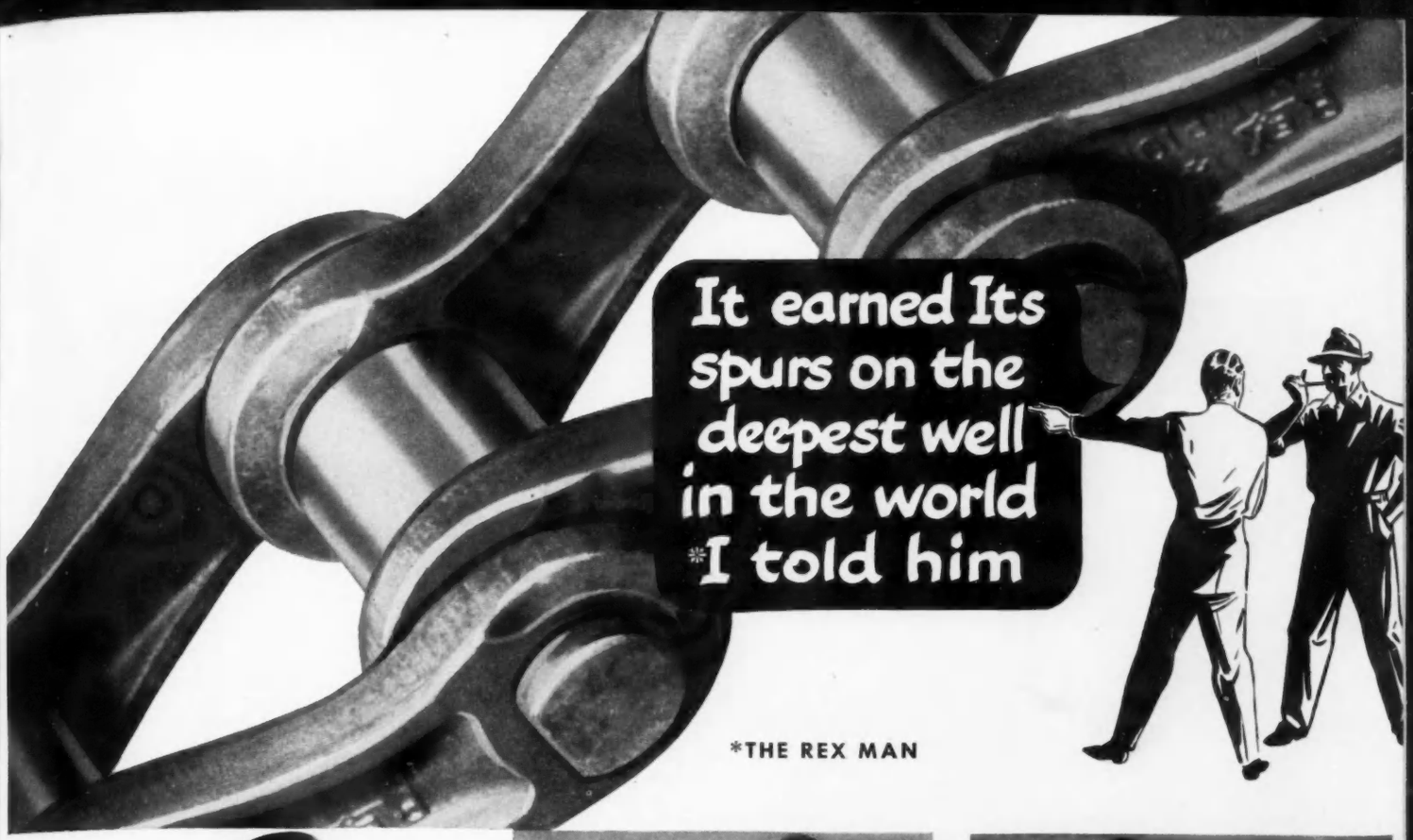
German Infiltration in the Industry

The grab of the Rumanian oil industry is constantly increasing. Most rapid progress is occurring in the smaller companies, in which German financial participation is becoming controlling. An instance of such seizure is the Petrol Block, in which German interest has been increased by credits for machinery supplied by the Brunn-Koenigsfelder Machinenfabrik. Another instance is the well established German control over the Foraky Romaneasca concern, which is in the hands of the Wintershall group of Cassel.

Seizure of the larger Rumanian companies is developing more slowly. The central German organization to take over the industry is the Kontinentale Oel Aktiengesellschaft (Continental Oil Company), created in March, 1941, with aim of bringing European oil production under German control. Its leading member companies are the Deutsche Erdoelwerke A. G., Gewerkschaft Elwerath, Wintershall A. G., Preussische Bergwerks A. G., and some large banks. The German government's influence in the organization is assured through composition of the board of directors, the chairman of which is Walther Funk, the Reich Economics Minister and president of the Reichsbank.

This concern concluded last year an "agreement" with the Astra Romana Company, Rumania's largest producing company formerly controlled by the Shell group. The Rumanian Acex Company, created in 1939 and at present engaged in the production industry, is also expected to "collaborate" with Continental Oil Company. The Petrofina Company and its affiliates were French-controlled and had been paying royalties in the form of oil to the Rumanian government.

The French government, however, had succeeded in having these royalties transferred to itself for a period of 12 years as security for payment due France by Rumania for war materials supplied Rumania by French industry. This arrangement has been cancelled by the Germans. Germany has also obtained control over certain marketing and transportation companies. One of these is Sardep, an export company which has been entrusted with development of loading equipment in the oil ports on the Danube.



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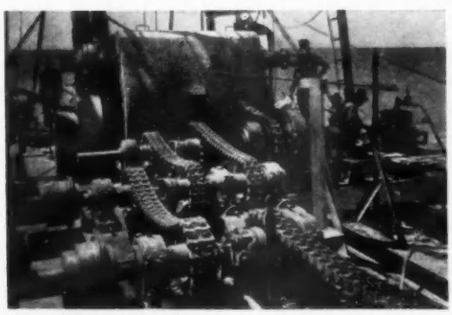

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Shrinking Exports Bring

Four producers and one failure were completed last year in Mexico's Poza Rica field, scene of the above operation.

Drop in Mexico's Output

Local consumption increase fails to check export loss—29 wells completed

COMPLETION of 29 tests in Mexico during 1941, resulted in 14 oil wells, 1 gas well and 14 failures. Although the new producing wells had a combined flush yield of 25,300 barrels of oil daily, Mexico's daily output of crude oil dropped to 117,500 barrels during 1941, as compared with 120,000 barrels in 1940, and 128,000 barrels in 1937, final year of private operation of the country's petroleum industry. This was due in large measure to curtailment of output because of reduced market demands.

Total production of Mexico for the full year was 42,885,000 barrels, in contrast with 43,920,000 barrels for 1940. Stocks in storage December 31, 1941, totaled 14,706,000 barrels, or about 500,000 barrels more than a year previous. Exports of crude and products during the year totaled 15,810,000 barrels.

Domestic consumption during 1941 accounted for approximately 28,075,000 barrels. This figure is arrived at by subtracting the total of the year's exports, plus the increase in stocks, from the total production of 42,885,000 barrels plus imports of 1,500,000 barrels. Domestic consumption, therefore, averaged 77,000 barrels daily.

The Poza Rica field was the only area to show a marked drop in yield for the year. Total production during 1941 was 25,350,000 barrels as compared with 28,360,000 barrels for the preceding year, a drop of 3,010,000 barrels. Poza Rica averaged 69,450 barrels daily during 1941, but in December was up to 88,000 barrels and by February, 1942, was producing in excess of 95,000 barrels per day. The Northern District produced 6,015,000 barrels during 1941, a decline of 175,000 barrels. The Southern District showed a material gain, rising 1,830,000 barrels to 5,600,000 barrels for the year.

Although half the producing wells completed in the country were in the Isthmus, production there just about held its own. Isthmus production in 1940 was 5,600,000 barrels and in 1941 was 5,920,000 barrels.

Oil producers completed during 1941 included 3 wells in the Tampico-Panuco area of the Northern District, good for an initial output of 1100 barrels per day; four wells in the Poza Rica-Mecatepec field good for 11,700 barrels daily; and 7 wells in the Isthmus good for 12,500 barrels per day. The two

Mexico Crude Production 1940-1941 By Districts

	1940		1941		Total Through December 31, 1941
	Total Production	Daily Average	Total Production	Daily Average	
Northern	6,190,000	16,900	6,015,000	16,500	758,225,000
Southern	3,770,000	10,300	5,600,000	15,350	1,033,340,000
Poza Rica	28,360,000	77,500	25,350,000	69,450	149,790,000
Isthmus	5,600,000	15,300	5,920,000	16,200	117,170,000
Others	.....	.....	(Gas)	.....	.....
Total	43,920,000	120,000	42,885,000	117,500	2,058,525,000

Drilling Activities in Mexico as of January 1, 1942

		Drilling	Suspended	Active Locations	Total
Chihuahua	A. G. P. N. (Govt.)	..	1	..	1
	F. Martinez	..	1	..	1
Northern District	Pemex (Govt.)	1	2	1	4
Southern District	Pet. de Mexico (Govt.)	..	1	..	1
(Ocotepec)	Pemex (Govt.)	1	..	..	1
Poza Rica Area	Pemex (Govt.)	1	1	1	3
	A. G. P. N. (Govt.)	..	1	1	2
Isthmus	A. G. P. N. (Govt.)	..	1	..	1
	Pemex (Govt.)	2	1	6	9
Total		5	9	9	23

Mexico Completions Data for 1941 and 1940, with Summary of Wells Completed up to January 1, 1942

	1941			1940			Total to Jan. 1, 1942		
	Prod.	Fail.	Total	Prod.	Fail.	Total	Prod.	Fail.	Total
Northern District:									
Sou. Tamaulipas	..	3	3	1	8	9	17	158	175
Tampico-Panuco Area	3	5	8	1	10	11	1605	2574	4179
Total Northern District	3	8	11	2	18	20	1622	2732	4354
Southern District:									
Ozulama-Tantoyuca Area	..	..	..	..	..	..	3	49	52
Tempoal Area	..	..	..	..	..	..	....	24	24
East Flank	..	..	..	..	..	..	38	102	140
Western Group	..	..	..	..	..	..	1	17	18
Tlacalula-Metlaltoyuca	..	..	..	..	..	..	1	16	17
Main Belt (Golden Lane)	..	..	..	..	..	..	527	526	1053
Total Southern District	..	..	..	..	..	..	570	734	1304
Poza Rica Area	4	1	5	7	1	8	41	11	52
Furbero-Papantla Area	..	..	..	..	..	..	16	62	78
Veracruz Embayment	..	..	..	..	..	..	....	3	3
Isthmus of Tehuantepec:									
Saline Basin	7	5	12	7	3	10	353	276	629
Tabasco	..	..	..	..	..	..	8	26	34
Chiapas	..	..	..	..	..	..	5	19	24
Total Isthmus	7	5	12	7	3	10	366	321	687
Others:									
Lower California	..	..	..	..	..	..	....	3	3
Chihuahua	..	..	..	..	..	..	....	3	3
Coahuila	..	..	..	..	..	..	....	22	22
Nuevo Leon	..	..	..	..	..	..	....	23	23
Northern Tamaulipas	1*	..	1	3	3	6	16*	24	40
Central Tamaulipas	..	..	..	..	..	..	....	12	12
Oaxaca	..	..	..	..	..	..	....	6	6
Yucatan	..	..	..	..	..	..	....	6	6
Valley of Mexico	..	..	..	..	..	..	....	8	8
GRAND TOTAL	15	14	29	19	25	44	2631	3970	6601

* Gas Wells.

largest producers were completed in the Poza Rica field, these having a flush daily yield of 5000 barrels each. All the oil producers were brought in by Petroleos Mexicanos, the government oil administration.

Drilling activities as of January 1, 1942, showed 5 wells drilling, 9 operations suspended, and 9 active locations.

Of the export total of 15,810,000 barrels of crude and products for 1941, the overwhelming amount of 13,680,000 barrels went to the United States. Of the remainder, 1,940,000 barrels went to Cuba, the balance of 190,000 barrels to South America and Australia.

During 1940, the exports totaled 20,010,000 barrels of which 15,720,000 barrels went to the United States.

Total exports of Mexican crude and products from March 18, 1938, date of expropriation, to January 1, 1942, amounted to 63,460,000 barrels. Of this, about 24,000,000 barrels were of products, the remainder being crude oil. Of the export total, independents took out 1,960,000 barrels of unexpropriated oil, that is, oil from production unaffected by expropriation.

Of oil from expropriated properties, the government administration consigned 3,800,000 barrels to the Empire, 10,500,000 barrels to Sinclair. Petroleos Mexicanos also shipped 14,650,000 barrels to Eastern States at Houston for refining, and to other interests 32,550,000 barrels of crude and products.

Consumption of gasoline in Mexico during 1941 averaged 12,225 barrels daily, according to record of taxes paid, as compared with 10,675 barrels daily in 1940. This shows a 14.5 percent increase in gasoline consumption for 1941 over 1940. Gasoline consumption in 1937 was 8000 barrels daily.

The average daily consumption of gasoline cited for 1941 represents nearly 379,000 barrels a month. Refinery stocks of gasoline at the end of 1941 totaled 345,000 barrels, or less than 30 days' supply on the basis of the average daily consumption.

Stocks in storage as of February 28, 1942, including crude and miscellaneous products, totaled 15,500,000 barrels. Miscellaneous products accounted for 6,245,000 barrels.

Total stocks in storage at the end of February showed an increase of about 750,000 barrels over the end of 1941.

Mexico's Poza Rica field showed a loss of 3,000,000 barrels in output in 1941 but daily production was being increased sharply early this year. Above a battery of separators and flow tanks in the field.

We Learned the HARD Way

ONLY a few years ago manufacturers of oil field equipment worked to tolerances designated by fractions of an inch. It was a big step forward when the term "thousandths" was generally adopted, but we did not really learn the full meaning of "plus or minus" until we were initiated into Government inspection.

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FORT WORTH, TEXAS

Shell Opens Badly Needed New Field for Colombia

Magdalena Valley wildcatting active in face of drastic reduction in drilling

By JACK V. HIGHTOWER, Foreign Editor

DRILLING of numerous wildcats in the Magdalena River Valley, accompanied by discovery of an indicated new field on the Yondo concession of Shell Oil Company of Colombia, featured Colombian drilling last year. The Yondo discovery was Casabe 1, drilled to 8280 feet and completed last October with a reported rating of about 400 barrels daily of heavy oil. Three more producers, completed on the Yondo this spring, confirm the hope that Casabe 1 establishes a badly needed new productive zone in Colombia. Elsewhere in the valley the wildcats completed during 1941 were generally disappointing. As the year ended, however, several uncompleted wells showed encouraging results. On the Barco concession of Colombian Petroleum Company, two tests developed as producers in the Tres Bocas and Socuavo areas north of the Petrolea field, at present the principal field of the concession.

Production Down in 1941

Colombian production fell off to 24,423,551 barrels, a decrease of 4 percent from the record production of 25,369,473 barrels in 1940. A factor in the decline was the shortage of tankers to carry oil from the maritime terminals at Mamonal and Cartagena. Lack of transportation and loss of some former European markets interrupted a steady annual rise in production since 1933 and has been attended this spring by a slump in operations.

During 1941 Tropical Oil Company's De Mares concession produced 20,471,899 barrels, which was 84 percent of the total Colombian output. The De Mares yield was 3 percent less than what it was in 1940. Along with this drop was a sharp decrease in drilled footage, the 1941 total being 49,900 feet as against 206,200 during 1940. Practically all 1941 drilling was done in the La Cira field, which produced 82 percent of De Mares oil.

A serious obstacle to an active drilling program developed on the De Mares concession last year when the Colombian government filed suit in the supreme court to terminate the life of the concession on June 14, 1946, and asked that surface properties as well as subsoil rights be surrendered on that date. The company contends that the expiration date is August 25, 1951. The issue is grounded in the terms of the concession contract, specifically the date on which exploitation began. A decision by the court is expected some time this year, but the uncertainty as to the outcome has had a dampening effect on the company's operations for the last 12 months. It is understood that several areas outside the two old fields in the concession merit exploration but the indefinite legal status of the property has confined recent drilling to these fields, both of which by this time have been rather well defined. The company's wildcat drilling last year centered in the Magdalena valley.

Colombian Petroleum Company's Barco concession last year produced 3,945,654 barrels, which came almost entirely from the Petrolea region. Drilling was confined largely to Petrolea and amounted to slightly under 50,000 feet as compared with a footage of 60,700 in 1940. Barco production in 1941 was

Colombia Production and Drilling Data

Name of Field	PRODUCTION DATA IN BARRELS				WELL DRILLING DATA				STATUS OF WELLS ON JANUARY 1, 1942				
	Total Production 1940	Total Production 1941	Daily Average Production On Jan. 1, 1942	Total Production For all Years Including 1941	No. of Wells Drilling at the End of 1941	No. of Wells Drilled in 1941	No. of Wells Drilled in 1940	No. of Wells Drilled in All Years Including 1941	Natural Flow	Pumping	Gas or Air Lift	Closed In	Dry-Holes And Abandoned Wells
Concesion De Mares (Tropical Oil Co.)													
Infantas	3,890,014	3,766,602	10,039	129,840,415	.....	0	1	471	3	339	....	99	30
La Cira	17,276,689	16,705,297	50,352	160,753,560	2	14	65	691	33	539	....	99	20
La Puerta	.....	.....	.....	.....	.....	.....	1	1	....	....	....	....	1
Mugrosa	.....	.....	.....	69,838	.....	.....	.....	4	....	....	....	1	3
Colorado	.....	.....	.....	1,901	.....	.....	.....	7	....	....	....	1	6
San Luis	.....	.....	.....	7,996	.....	.....	.....	6	....	....	....	3	3
Total	21,166,703	20,471,899	60,391	290,673,710	2	14	67	1,180	36	878	....	203	63
Concesion Barco (Colombian Petroleum Co.)													
Petrolea	4,152,019	3,909,612	10,568	9,793,663	1	30	31	137	83	11	....	16	27
Rio de Oro	21,286	3,431	.....	64,708	.....	.....	1	13	....	....	....	9	4
Leoncito	.....	.....	.....	.....	.....	.....	.....	1	....	....	....	....	1
Carbonera	28,463	28,263	63	64,665	.....	.....	2	3	....	2	....	1	.....
Tres Bocas	1,002	4,054	11	5,056	1	1	1	2	1	....	....	....	1
Sardinata Sur	.....	294	.....	294	.....	1	.....	1	....	....	....	....	1
Sardinata Norte	.....	.....	.....	.....	1	.....	.....	1	....	....	....	....	1
Socuavo	.....	.....	.....	.....	1	.....	.....	1	1	....	....	....	.....
Total	4,202,770	3,945,654	10,642	9,928,386	4	32	35	159	85	13	....	26	35
Concesion Yondo (Shell Oil Co.)													
Casabe	.....	5,998	73	5,998	1	1	.....	1	1	....	....	....	.....
Total Colombia	25,369,473	24,423,551	71,106	390,608,094	7	47	102	1,340	122	891	....	229	98

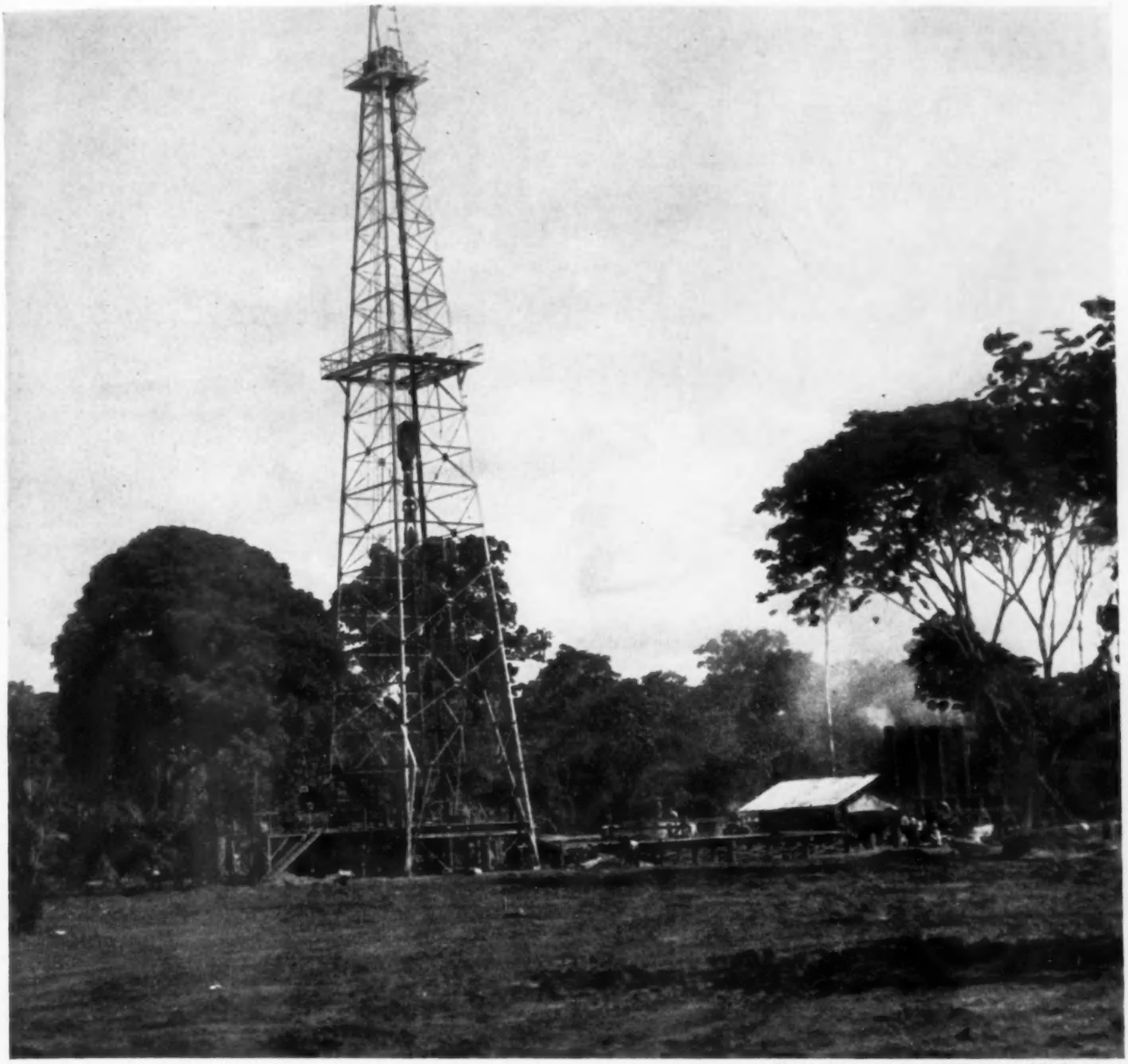


Photo Courtesy, Socony-Vacuum Oil Company

Carare Petroleum Company's McCarthy 1, a Test in Magdalena River Valley, Colombia, 1941.

a little under the peak production of 4,202,770 barrels established in 1940 following completion of the Petrolea-Covenas pipe line. Monthly production fell off noticeably in the last quarter of 1941 and was influenced by irregularity of shipments from the export terminal. An encouraging development on the Barco was the drilling of a second producer in the Tres Bocas zone, from which a pipe line is under construction to carry the oil into the main line from Petrolea. Further drilling is under way in the zone.

Shell Scores in Valley Tests

Much exploratory drilling was carried out in Colombia in efforts to meet the country's needs for new fields. Four wells were completed and 9 were drilling or testing at the close of the year. Outside the Barco, where 5 wells were drilled, wildcatting was concentrated in a fairly small area adjacent to the Magdalena river near Barranca Bermeja. In this area the drilling was led by Tropical Oil Company and affiliates of Shell Oil Company of Colombia, Socony-Vacuum Oil Company and Standard Oil Company of California. Most of the tests were drilled on the west bank of the river.

Of 3 wells completed in the valley during 1941, Shell's Casabe 1, drilled on the Yondo concession, a 121,000-acre tract held by a Shell affiliate, El Condor Petroleum Company, was a producer which apparently discovered a new field. The well is on the west river bank almost directly across from Tropical Oil Company's refinery at Barranca Bermeja. Drilled to 8280 feet, the well was completed last October and is reported as rating between 300 and 400 barrels daily of 21-gravity oil. At least two productive levels, one at 6748-6993 feet and the other at 7435-7602 feet, are understood to have been found. Last December the well was reported to be producing by gas lift.

The prospect that Casabe 1 has established a new field has been strengthened by a second test spudded last December, drilled to 3670 feet and completed in January as a pumper rated at several hundred barrels daily. A third well, spudded last spring, was re-

cently reported as testing at the rate of 800 barrels daily with considerable gas pressure. It is understood a fourth well tested recently at 400 barrels daily of 22-gravity oil under natural flow. The importance which Shell attaches to its discoveries is seen in the fact that the company last fall sought a renewal of its exploration period on the concession, which was granted in 1938 for three years.

On the Obregon Arjona concession, a 90,000-acre tract transferred to La Perla Petroleum Company, a Shell affiliate, Shell drilled Palagua 1 to 3520 feet and abandoned in January. This well is appreciably further south along the river than the other wildcats, being about 75 miles southwest of Barranca Bermeja.

Two wildcats were drilled by Socony-Vacuum Oil Company affiliates in the valley. Cimitarra 1, situated on Magdalena River Valley Petroleum Company's 81,000-acre concession a short distance northwest of Barranca Bermeja, went to 1494 feet and developed gas production at 1013-1018 feet, showing at a rate of 240,000 cubic feet per day through a ⅛-inch choke. Small shows of heavy oil were obtained. The well was suspended last fall until the gas could be used as fuel for future drilling. The other test, McCarthy 1, was drilled on the 50,700-acre concession of Carare Petroleum Company on the east bank of the river 40 miles north of Barranca Bermeja. This well was drilled to about 5600 feet before being abandoned last month.

Richmond Petroleum Company, subsidiary of Standard Oil Company of California, drilled a dry hole for Sierra Nevada Petroleum Company, a Richmond affiliate. The well, Braval 1, was drilled on the 122,000-acre Camacho Roldan concession on the west bank of the river about 50 miles north of Barranca Bermeja and reached 2812 feet, where it was abandoned last spring. Richmond drilled another dry hole for an affiliate, Compania Colombiana de Petroleos Occidental, on the 56,500-acre Villamizar concession on the west bank of the river opposite Carare Petroleum Company's McCarthy 1. The Villamizar well, Culimba 1, was abandoned last December after drilling to 2069 feet and penetrating basement rock.

Tropical Oil Company drilled Cimitarra 1 on its 42,000-acre Gutierrez concession north of and adjoining Shell Oil Company's Yondo concession, this well going to 9285 feet before being abandoned last February.

Barco Gets Producers

A hundred miles northeast of the center of the Magdalena valley wildcat area, Colombian Petroleum Company had an encouraging year in exploratory drilling on the Barco concession. Late in 1940 the company got a small producer, Tres Bocas 1, about 13 miles north-northwest of the center of the Petrolea north dome field, production coming from around 3000 feet. Last year a second well was drilled to 1987 feet before being abandoned. The rig was skidded to location for No. 2-A about ¾ mile west of No. 1, and the new well, drilled to 9228 feet, became a 500- or 600-barrel producer last spring. The crude is in the distillate range with a gravity of about 52° API. A small pipe line is under construction to carry the Tres Bocas oil into the main pipe line running from Petrolea to Covenas.

Another productive region on the Barco was discovered with the drilling of Socuavo 1 to 9850 feet. This is the deepest Barco well, and is about 8 miles north-northwest of Tres Bocas 1. After plugging back to 9100 feet and acidizing, the well recently tested at the rate of several hundred barrels daily of 44-gravity oil. The well was completed earlier this year. A second Socuavo well is drilling 4 miles north of it.

Colombian Petroleum Company drilled two tests in the Sardinata area. One, South Sardinata 1, 5 miles west of the lower end of the Petrolea north dome, was drilled to 4717 feet and produced non-commercial amounts of oil before

Installing Diesel Rig for Socony-Vacuum Oil Company's Narino 1 on Restrepo Concession, Magdalena River Valley, near Porto Wilches

being abandoned last spring. North Sardinata 1, 5 miles north of the southern well, was spudded in October and reached 5005 feet before abandonment in February.

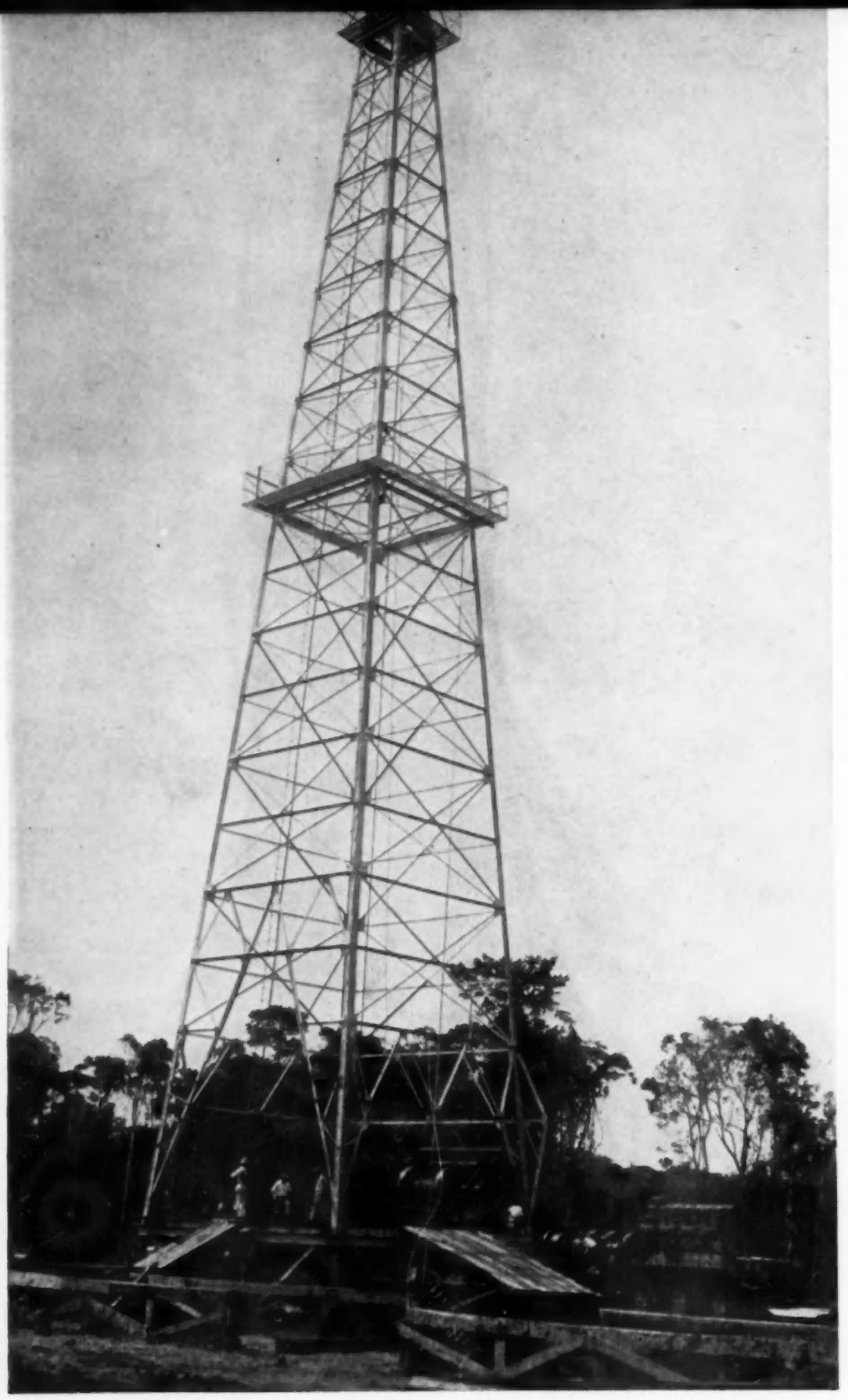
Wide Area Under Study

Shell Oil Company of Colombia and Richmond Petroleum Company have been active in exploratory work in the Llanos territory of eastern Colombia, which has been estimated to comprise about 50 percent of the prospective oil land of the country. Shell has established its head field office at San Martin, Intendency of Meta. The company has several undrilled concessions in the east, as well as exploratory rights. Richmond Petroleum Company has been granted rights to operate a radio station at Villavicencia, and last October had a fleet of trucks in the region of Meta Intendency ready for work in the Llanos, where the company has a 247,000-acre concession.

This year, Tropical Oil Company obtained a radio permit for operations in the Llanos. The company has obtained renewals of its radio permits to operate in the departments of Antioquia, Boyaca, Cundinamarca, Caldas, Magdalena, Bolivar, Santander and Tolima. Shell evidently intends extensive exploration in western Colombia. At the end of last year the company was reported to have secured rights to operate radio stations in the departments of Antioquia, Bolivar, Boyaca, Caldas, Cundinamarca, Magdalena, Santander and Tolima.

Developments in 1942

The rate of exploratory drilling has been maintained the first part of this



Rigging Socony-Vacuum Oil Company's Narino 1 on Restrepo Concession near Porto Wilches in Magdalena River Valley.

year. In the Magdalena valley, Shell Oil Company of Colombia continues development of its Yondo concession, and early in June had reached 2200 feet in the fourth well there. Casabe 3 was still testing. Last March the company spudded a test, El Doce 1, on a 119,000-acre concession obtained by transfer last year from Anglo-Colombian Petroleum Company, this concession lying on the east bank of the river about 75 miles southeast of Barranquilla. The well had reached 6200 feet on June 1. Richmond Petroleum Company, on the Camacho Roldan concession, where Braval 1 was abandoned last spring, was drilling No. 2, southeast of No. 1, at 3300 feet on the same date. The company has scheduled a second well on the Villamizar concession. A second well was being rigged a few weeks ago on Magdalena River Valley Petroleum Company's concession where Cimitarra 1 was completed as a gasser last fall. Tropical Oil Company drilled Cimitarra 2 on its Gutierrez concession in April and suspended drilling during May.

Colombian Petroleum Company continues its Barco explorations. Socuavo 2, 4 miles north of the No. 1 producer completed last spring, was drilling at 5000 feet late in June. Tres Bocas 3, 2 miles west of No. 1 Tres Bocas, was drilling below 4000 feet in the same period.

The exploratory work in progress in Colombia at the close of 1941, and the numerous bids made for national concessions, would, under normal conditions, virtually assure a healthy drilling and exploration program throughout 1942. The uncertain factor, of course, is the extent to which the war will continue to hamper exports from the country and obstruct efforts of the companies to import drilling equipment.

A change in the Colombian oil law affecting drilling on private property seems to be badly needed if the full potentialities of the country are to be realized. There has been virtually no drilling on these lands, estimated to embrace roughly 40 percent of the prospective oil territory of Colombia, because before a drilling permit is issued, proof must be shown that the lands became private property prior to October, 1873, and present legal requirements in establishing such proof are extremely difficult to meet. Last year the Colombian congress had under consideration a change in the law that would remedy this difficulty but congress adjourned without final action on the measure. Whenever an effective amendment is adopted, according to oil companies interested in Colombia, an energetic and probably fruitful drilling campaign on private lands will result.

Colombia Concession Bids and Changes During 1941

Bid Made By	National Department In Which Tract Situated	Area, Acres	Status Reported on 12-31-41
Angel, Gabriel	Bolivar	61,200	Bid made
Carrisoza, A. Borda	Llanos Region	170,000	Bid accepted
Anglo-Colombiana de Petroleos	Intendencia de Meta	245,000	Concession granted
Colombiana de Petroleo El Condor	Intendencia de Meta	247,000	Bid accepted
Colombiana de Petroleo El Dorado	Magdalena	123,500	Bid accepted
Colombiana de Petroleos El Meta	Tolima	72,900	Bid accepted
Colombiana de Petroleos El Meta	Tolima	123,500	Bid accepted
de Petroleos Gran Colombia	Magdalena	123,500	Bid accepted
Colombiana de Petroleos Occidental	Bolivar	21,900	Bid accepted
Colombiana de Petroleos Occidental	Bolivar	56,500	Transferred from L. A. Villamisar
de Petroleos Sierra Nevada	Bolivar	122,000	Transferred from C. Roldan
Laserna, Francisco	Boyaca	39,000	Concession granted
Pena, Roberto	Antioquia & Bolivar	62,500	Concession granted
Regalias Petroliferas Colombianas	Llanos Region	235,000	Bid made
Saenz, Pedro Londano	Cundinamarca	63,400	Bid accepted
Shell Oil Company of Colombia	Magdalena	119,000	Transferred from Cia Anglo-Colombiana
Shell Oil Company of Colombia	Santander	123,500	Concession surrendered
Tavera, Alberto Arango	Antioquia	100,000	Bid accepted
Theves, Martin	Antioquia	122,000	Concession granted
Tropical Oil Company	Atlantico	116,000	Bid accepted

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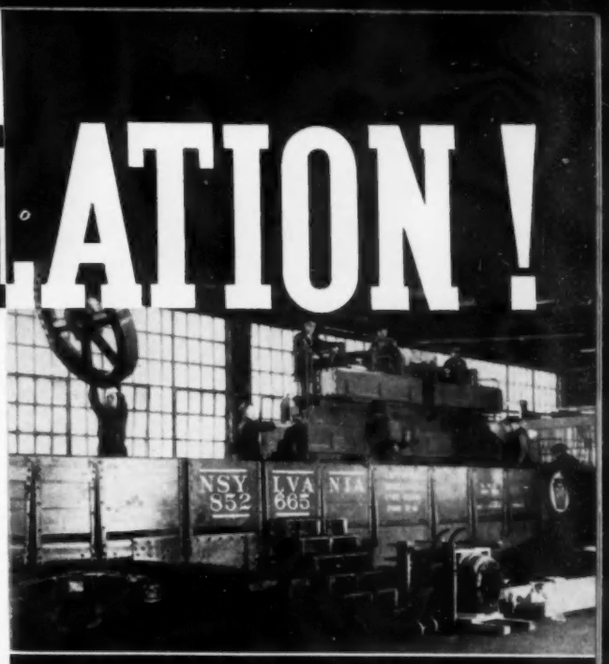

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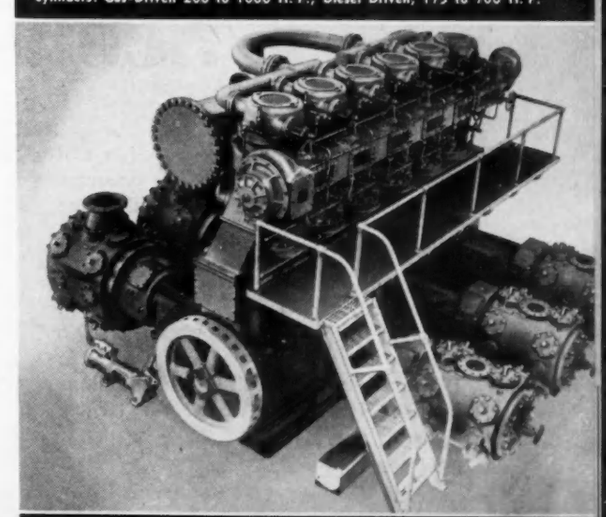

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Exploration Progresses in Scenic West Indies

A FAIR amount of exploration and the drilling of several wildcats occurred last year in the West Indies, although no fields were reported found. Thus far, profitable oil production has been confined to the Motembo field in Santa Clara province on the northern coast of Cuba, where an estimated 7,000,000 gallons of naphtha was produced in 1941 as compared with 5,700,000 gallons in 1940. However, two of the largest companies operating in the West Indies, Atlantic Refining Company of Cuba and Dominican Seaboard Oil Company, were carrying on exploratory work which has extended into this year.

In Cuba, Atlantic Refining Company concluded, in the early part of 1941, a wildcatting program in which several wells were drilled. None resulted in commercial production, and the program was temporarily discontinued. The company, however, has retained some concessions and from the last half of 1941 up to the present has continued geological and paleontological studies. Early last year, exploration with core drilling operations was reopened. At

Picture: **A seismograph crew on the job in Cuba for the Atlantic Refining Company of Cuba.**

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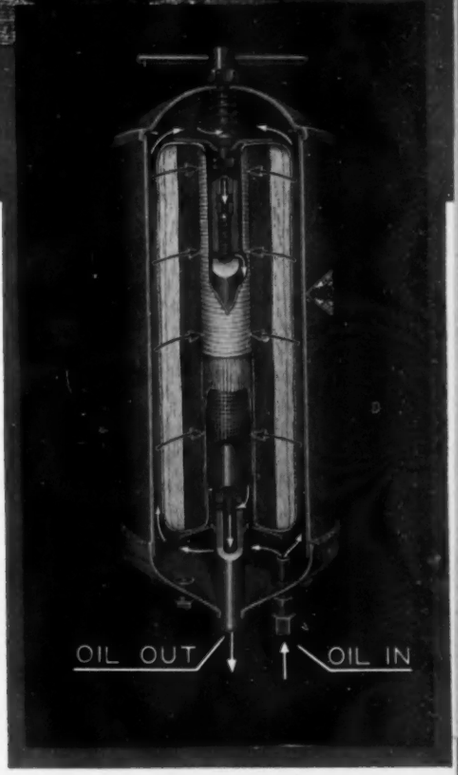

Cut-away section of the Briggs Clarifier showing the construction

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INVEST IN VICTORY—BUY U. S. WAR BONDS AND STAMPS

Dominican Seaboard Oil Company's Maleno 1 Producer on the Maleno Structure, Azua Province, Dominican Republic.

present these operations are under way on the company's Carcomar concession along the north coast of Las Villas province, situated about the center of the island. One core hole has been completed and a second is drilling. Whether a deep test will be drilled later this year depends on the results of these two holes.

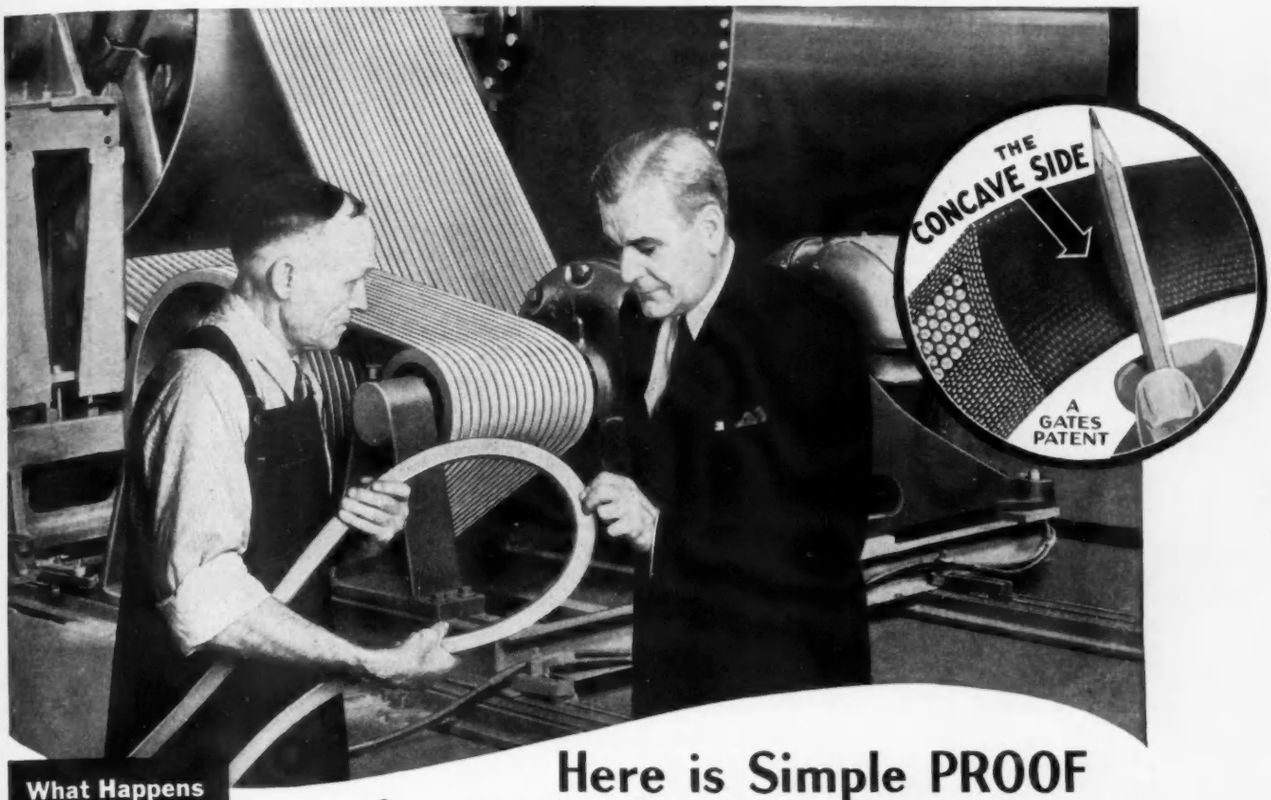
Production in the Motembo field has been encouraged by the fact that the tax laid on the use of natural gasoline from the field is appreciably less than that laid on imported gasoline. Department of Commerce data indicate that the field had about 200 producing wells last year. One of the companies operating in the field declared several weeks ago that production is averaging 14,300 barrels monthly as compared with an average monthly yield of 13,100 barrels in 1941. The largest producer in the field was completed last August. Drilled to 1349 feet on Centralia Naphtha Company's Lot No. 1 of Ampliation of Faust Claim, the well, No. 5, showed on a 24-hour test a flowing production of 682 barrels of 56-octane naphtha. The same company's No. 6 well also was completed as a large producer. At 200 to 500 feet north of No. 6, five wildcats, all drilled to 2000 feet or more, developed as dry holes. In the Luisa Marcela area, operated by Oil Well Drilling Company, a test drilled to 1997 feet developed as one of the best producers of the area and the deepest producer drilled there.

Early this month several wildcats were being drilled on the Lazo de Oro claim in the Motembo field. Two others, both below 1700 feet, were being drilled by Motembo Mining Company on its Esperanza and Triunfo tracts with no shows developing at that time. It is understood a serious shortage of cables is affecting drilling in the Motembo field.

Haiti and Dominican Republic

Atlantic Refining Company holds concessions over a large part of the Republic of Haiti. Geological studies were conducted over these properties during 1941 and up to the present. The studies have been continuously directed toward selection of exploitation acreage under concession terms in the latter part of this year. No geophysical work or wildcatting has so far been undertaken. A 45-percent interest in the Haitian concessions is owned by Standard Oil Company (New Jersey), Seaboard Oil Company and associates.

In the Dominican Republic, Dominican Seaboard Oil Company, following



What Happens When a V-Belt Bends

FIG. 1

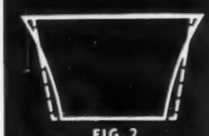


FIG. 2

Here is Simple PROOF *of a* REAL SAVING in BELTS, in RUBBER, in POWER

In two minutes you can prove for yourself a simple fact that will lengthen belt wear and reduce operating costs.

Pick up any V-belt. Bend it as it bends when it goes around its pulley. As the belt bends, grip the sidewalls with your fingers. You will feel the *sides* of the belt *change shape.* If the belt has *straight* sides, the bending will force those sides to bulge out—as shown in Figure 1 (on the left).

Now make this same test with a belt that is built with the patented Concave side. Again you will feel the sides change shape but with this *important difference:*—the Concave side becomes perfectly straight. This belt, when bent, takes a shape that exactly fits its sheave groove. (See Figure 2).

Here are the savings. First—no out-bulge of the sides means uniform sidewall wear—a saving in belts for you, a saving in rubber for the Nation. Second—the full side of the belt uniformly grips the sheave wall. This means heavier loads without slippage—a saving in belt wear and also in power!

Only belts built by Gates are built with the Concave side, a Gates patent.

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Pit receiving oil from Dominican Seaboard Oil Company's Maleno 1-A, Azua Province, Dominican Republic.

completion of part of its exploratory work there last year, was encouraged to the extent of planning a drilling program during 1942. The program is centered in two localities, one of which has never been drilled, and a third area might be drilled. Work is expected to begin as soon as equipment can be provided.

The company plans a deep test on the Comendador structure, a hitherto undrilled area on an exploration concession of 23,700 acres. The structure, a defined anticline which was established by surface geological and aerial photography, is close to the Haitian border in the west-central part of Dominican Republic and is 75 miles west of the Dominican town of San Juan.

The company also expects to drill several shallow tests on the Maleno anticline 6 miles northwest of Azua. Two tentative locations have been made a short distance southeast of two shallow wells which the company drilled several years ago. These old wells each had an initial production of several hundred barrels daily from around 450 feet but were closed in because of trouble with water. The first was drilled to 1197 feet and the second, to 3033 feet. In 1919 a third well was drilled by the Inter-Ocean Oil Company on the north flank of the structure and was abandoned at 2902 feet.

Dominican Seaboard possibly will drill also on the Higuerito concession, a 66,700-acre tract about 4 miles east of the Maleno structure. This highly faulted anticline has 8 abandoned wells. Inter-Ocean Oil Company drilled 2 wells in 1919, West India Petroleum, Mining and Export Company drilled 5 during 1904-1907 and the Antillian Petroleum Company drilled 1 in 1928. In 1937, Skelly Oil Company prepared to spud a test but abandoned it because of title complications.

A geological party is expected to be maintained in the country this year by Dominican Seaboard. No other companies are operating in the republic. Standard Oil Company (New Jersey) last year obtained a 50 percent interest in the company, the remainder of which is owned by Seaboard Oil Company, Case-Pomeroy and Company and Harold Bishop.

Last year the Dominican Republic adopted a liberal petroleum law intended to attract more oil companies. Up to 24,711 acres may be solicited under a concession contract which allows a 3-year exploration period, and at the end of such period a company may select up to half of the solicited acreage in tracts not exceeding 1235 acres, for an exploitation period of 40 years. Other features of the new law are: low initial and annual taxes, freedom from taxation by municipalities, no duties on imports of equipment and no duties on exported oils, and right of the concessionnaire to transport, refine and dispose of oil without interference. The law establishes government ownership of the subsoil but does not affect concession rights obtained prior to passage of the law.

West End of gorge of Artibonite River in Eocene Limestones, Haiti. View from trail from Petite Fond to Las Cahobas.

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One of Franks 100 percent portable truck-mounted rigs which are drilling in (censored), South America. Inset shows rig in over-the-road position.

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Most Canadian Provinces Being Prospected

Surveys pushed in British Columbia, Ontario, Saskatchewan and Quebec as well as Alberta

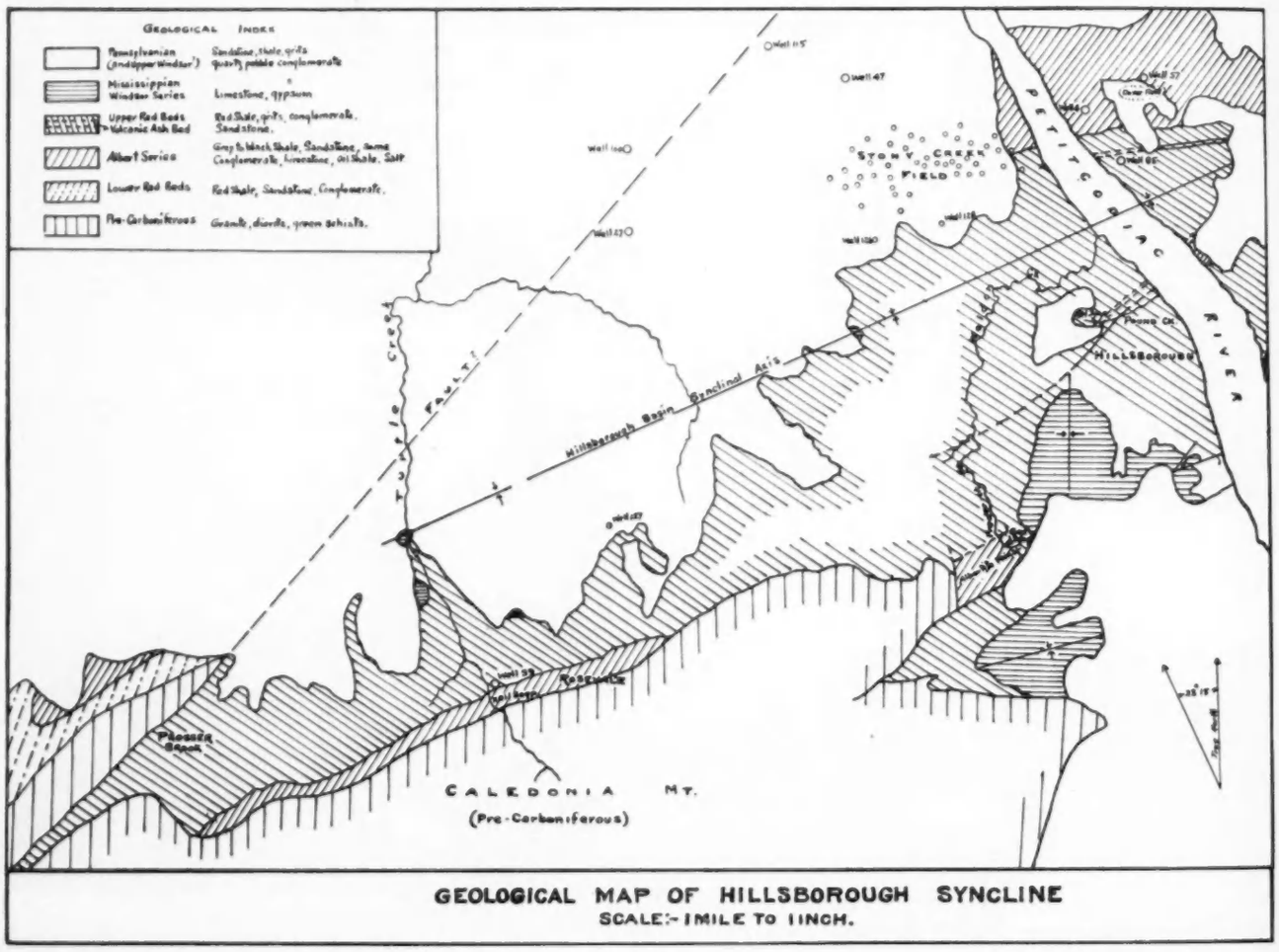
GEOPHYSICAL and geological studies were being conducted in most Canadian provinces last year by the Dominion Geological Survey, the provincial governments, oil companies and individual operators. In addition to work in Alberta, surveys were under way—and are being made this year—in British Columbia, Ontario, Saskatchewan and Quebec.

In Ontario, second to Alberta in output of oil, exploratory work continued mainly in the search for gas. Drilling was maintained in the Malahide field of Elgin County. No new fields were opened. However, various wells found local high areas atop the Silurian formation, in the upper part of which is a gas zone. For the second year in succession the production of petroleum in Ontario showed a marked decrease. Drilling and exploration was confined almost entirely to the known or proved oil areas, with the result that little wildcatting was carried out in new territory.

Third Ranking Oil Province

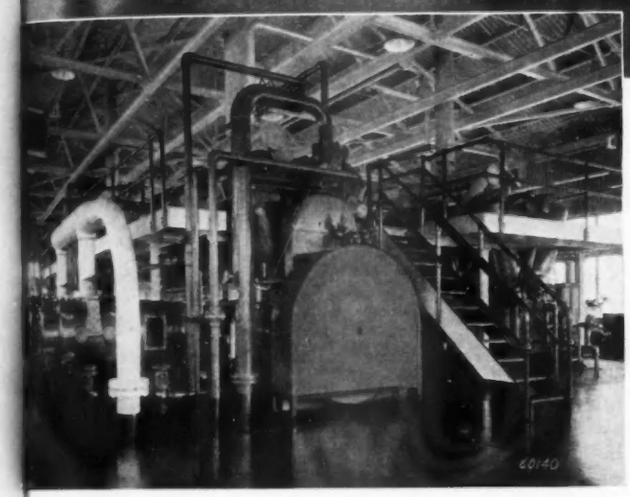
New Brunswick is the third-ranking province in oil production. Operations in that province are dominated by New Brunswick Gas and Oilfields, Ltd. This company operates the Stony Creek field lying on the northern limb of the Hillsborough Syncline in Albert County about 10 miles south of Moncton. Gas and oil are produced from a series of lenticular sandstones. Up to the present, six groups of sands have been recognized, the major gas producers being those of Groups III, IV and V. In Group VI the sands are gas bearing up-flank and oil bearing down-flank. An accompanying general geological map gives the position of the field in relation to the syncline.

The productive sands are found in the Albert Series of Middle to Lower



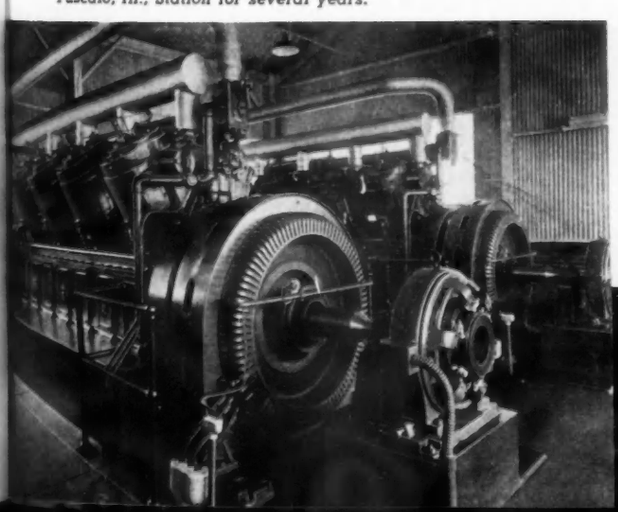
GEOLOGICAL MAP OF HILLSBOROUGH SYNCLINE
SCALE:- 1 MILE TO 1 INCH.

6 INGERSOLL-RAND *4-Cycle* GAS-DRIVEN COMPRESSORS



Above: *Another view of the 650-hp gas-driven compressors.*

Below: *The two 370-hp Ingersoll-Rand Type PVG gas-engine generator units shown below were installed in Panhandle Eastern's Liberal Station in 1936, and a third unit was added later. Two similar 275-hp units have been operating at their Tuscalo, Ill., Station for several years.*



At Hansford Station of Panhandle Eastern Pipe Line Co.

These six Ingersoll-Rand 4-cycle V-angle gas-engine-driven compressors are in service at the Hansford Station of the Panhandle Eastern Pipe Line Co. They are helping to pump natural gas from the large Amarillo and Hugoton fields in the Texas Panhandle to key defense-production centers along a 1155-mile high-pressure pipe line extending to Detroit, Michigan. When the two additional units, now being built at the Ingersoll-Rand factory, are installed in the 14'x17' spaces indicated above, this booster compressor station will total 5200 hp.

The compressor cylinders, designed to operate at 275- to 325-lb suction pressure and 450- to 500-lb discharge, are equipped with clearance pockets and internally built by-passes. Combined with speed control, these features provide the great flexibility which enables the station to cope with wide fluctuations in the volume of gas handled.

• • • •

Ingersoll-Rand 4-cycles — in standardized sizes from 75 to 800 hp — are built as engine-driven compressor units and as engines for driving generators, geared or direct-connected centrifugal pumps, or reciprocating pumps. Other I-R products for oil-field and refinery work include all kinds of Compressors and Pumps, Diesels, Steam-Jets, Pneumatic Tools, and Rock Drills.

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6-142

Production of Oil in Canada[1]

Province	1940 Barrels	1941 Barrels
Alberta[2]	8,493,237	[3]9,928,162
Ontario	186,471	158,919
New Brunswick	21,161	22,332
Northwest Territories[2]	17,184	14,119
	8,718,053	10,123,532

[1] Dominion Bureau of Statistics; subject to revision.
[2] Total well output.
[3] Includes 19,519 barrels from McMurray tar sands.

Mississippian age. The proved productive zone covers a superficial area of 2½ miles east to west and exceeding a mile north to south. The large number of productive sands met have given the field high productivity and longevity per superficial acre. Discovered in 1911, the field has yielded, to the end of 1941, a total of 18,951,646,000 cubic feet of gas and some 300,000 barrels of crude. The gas is pure, sulphur-free and has a heat content of 1130 Btu per cubic foot. The crude is of Pennsylvanian type with a high quality lubricating fraction.

Over 100 Wells Drilled

Gas production in 1941 was 653,430,000 cubic feet. Crude production was 22,334 barrels. Anticipated yields of gas and crude for 1942 are 650,000,000 cubic feet and 30,000 barrels. Over 100 wells have been drilled on the Stony Creek field. An additional 20 wells have been exploratory, but most were inconclusive tests. Last year, 8 wells were either drilled new or deepened for production. Two others, No. 126 and No. 128, were drilling several weeks ago at 3933 and 4400 feet respectively to prove extensions to the field. No. 126 is in the Group II sands. Well 128 found some small gas and oil productivity in Group III and was being deepened to Group VI, anticipated at about 5000 feet.

A wildcat, No. 127, was spudded last year at Irving Settlement, about 7 miles from Stony Creek. This well was designed to test productivity on the southern limb of the Hillsborough Syncline. Late last month it was drilling at 3667 feet in the Upper Red Beds. The Albert Series was anticipated at about 4000 feet.

Production of Natural Gas in Canada[1]

Province	1940 1000 Cu. Ft.	1941 1000 Cu. Ft.
Alberta	27,459,808	26,365,770
Ontario	13,053,403	12,131,895
New Brunswick	616,041	610,393
Saskatchewan	100,773	105,328
Manitoba	600	.....
Northwest Territories	1,500	.....
	41,232,125	39,213,386

[1] Dominion Bureau of Statistics; 1941 data preliminary.

Prospecting Continued

New Brunswick Gas and Oilfields drilled a total footage of 18,033 feet last year. Geological reconnaissance parties were in the field during the year in the Havelock-Cornhill area, 25 miles northwest of Stony Creek, and in the Sussex-Portage Vale region lying 25 to 40 miles west of Stony Creek. Further geological work is proposed for this summer. The Canadian government, in cooperation with the government of New Brunswick, has decided to explore the potentialities of the oil shale in the southeastern part of the province. Surveys are scheduled at once. Work will be carried out under auspices of the New Brunswick Department of Lands and Mines.

In Saskatchewan Province, Imperial Oil, Ltd., has planned four deep tests this year. The company has received exploratory rights to 1,000,000 acres in south central Saskatchewan, 45 miles south of Regina. Independent Oil Ventures, Ltd., of Regina was preparing last spring to drill three wells.

Alberta Tar Sands Tapped to Meet Canadian War Needs

By JAMES MONTAGNES

WITH increasing need for oil within easy transportation, the Canadian government has turned towards the vast untapped tar sands of northern Alberta as a source of supply.

"An intensive study of the tar sands is under way," stated Munitions and Supply Minister C. D. Howe in Parliament recently. "Today we think of that area as a source of immediate oil production, provided the problems connected with its development can be solved rapidly and with some degree of certainty. Arrangements have been made to develop further the wells on the lower Mackenzie River at Fort Norman. Additional wells are being drilled, the refinery capacity is being increased, and a short pipe line is being installed to bring the oil across to the location of the Alaska highway."

From the sands along the Athabasca River in northern Alberta, Indians have since time immemorial used pitch to caulk their canoes. The first white men to come into the area in 1788 found the oil sands to stretch for miles, in some places found oil bubbling to the surface. Since the settlement of Alberta many attempts have been made to obtain oil from these oil-rich sands. Last year the first successful commercial extraction plant began operations to obtain lubricating oil and gasoline from the tar sands.

Major Oil Reserve

The oil sands along the Athabasca River are considered by oil authorities to be one of the largest oil reservoirs in the world. According to Canadian government geological estimates the sands contain at least 100 billion barrels of oil. The United States Bureau of Mines places the oil content of the area at 250 billion barrels. Other estimates place the gasoline supply at 35 billion barrels.

Because of transportation difficulties, the field is just north of Canada's end of steel, and because no suitable extraction system had been devised, the oil sands remained unworked. These oil saturated sands range in thickness from a few feet to 225 feet, and in oil content up to 25 percent by weight. They cover an area estimated at from 10,000 to 50,000 square miles. A large part of the area is overlain with shale and sandstone to a maximum depth of 1800 feet, and underground methods of mining are not considered feasible. The oil will not flow into wells fast enough to be pumped commercially. But erosion on the Athabasca River and its tributaries has left benches that can be mined by open pit methods.

Asphalt for Paving

The bituminous sands have produced a high quality of asphalt which has been used for paving extensively in the past, and it is expected to be used for this purpose also on the Canada-Alaska Highway now being built. They stretch for miles on each side of the river, covering roughly an area 115 miles north and south, and 55 miles east and west. The sands lie about 600 miles north of the international boundary in an area which can be developed the year-round.

The extracting plant, which went into operation last year on a small scale, took 11 years of research by American engineers to develop. The sands go through a separation process, then to a refinery where the crude oil is turned into gasoline, fuel oils, asphalt and coke. It is thought that synthetic rubber may also be developed from these bituminous sands after passing through the separation process.

War Pressure Stimulates Alberta Operations

By F. K. BEACH
Petroleum and Natural Gas Conservation Board, Calgary

WAR conditions have dictated that Canada must be as nearly self-supporting as possible in raw materials and in manufactured goods, so as to permit diversion of maximum quantities of imported materials to items required by the armed forces. Canada has always had to import much of its petroleum requirements, but the amount imported in 1941 is not published. We do know, however, that some 28 million barrels of motor gasoline was used, and that internal production was about 10¼ million barrels of crude oil. An oil controller has been set up by the Dominion government under the Department of Munitions and Supply, and he has been given wide powers over all phases of the industry.

Alberta Oil Production

The Dominion Bureau of Statistics shows that in 1941, Alberta produced nearly 98 percent of the oil recovered in Canada and the bulk of this came from Turner Valley. Other sources in their order of importance are: Ontario, minor fields in Alberta, New Brunswick, Alberta tar sands, and Northwest Territories.

Canadian Crude Production

	1941	1940
Turner Valley	9,830,343	8,454,497
Other Alberta Fields	78,300	40,710
Tar Sands	19,519	.....
Northwest Territories	14,119	17,184
Ontario	158,919	186,471
New Brunswick	22,332	21,161
	10,123,532	8,720,023

Alberta Drilling Activity

The following table covers footage drilled during 1941 and a comparison with 1940.

Canadian Footage Drilled

	1941	1940
Turner Valley	376,676	296,832
Other Oil Fields	51,824	23,448
Gas Development	16,123	1,045
Exploration	46,716	48,779
Total	491,339	370,104

The division between "other oil fields" and "exploration" is more or less arbi-

—Photo by H. Pollard, Calgary

Atlas British Dominion 2, farthest north producer in North Turner Valley field, was completed early this year for an initial production of 1335 barrels at 8710 feet.

Alberta Production and Drilling Data

NAME OF WELL	PRODUCTION OF CRUDE IN BARRELS				WELL DRILLING DATA				STATUS OF WELLS ON JANUARY 1, 1942				
	Total Production in 1940	Total Production in 1941	Daily Average Production on Jan. 1, 1942	Total Production for all Years Including 1941	No. of Wells Drilling at End of 1941	No. of Wells Drilled in 1941	No. of Wells Drilled in 1940	No. of Wells Drilled in all Years Including 1941	Natural Flow	Pumping	Gas or Air Lift	Closed In	Abandoned
Alberta:													
Turner Valley	8,454,497*	9,830,343*	26,919*	45,906,223*	29	45†	36†	318	215	3	2	52‡	21
Red Coulee	12,177	11,626	31	305,841	0	0	0	21	0	7	0	0	14
Vermilion	10,817	22,051	96	33,070	0	11†	11†	29†	0	5	0	3	*
Wainwright	7,527	11,733	38	156,685	0	0	0	33	0	6	0	3	18
Other Localities	10,189	32,890	144	110,783	7	§	§	§	5	....	....	....	others are Gas Wells
	8,495,207*	9,908,643*	27,228	46,512,602	26								
Ontario	186,471	158,919											
New Brunswick	21,161	22,332											

§No intelligible answer to the number of wildcat wells drilled or how many wells not actually abandoned could be put into production.
* Impossible to assess differences pending success or failure in developing production.
‡ All of these yield so small an amount of oil per unit of gas as to be classed as gas wells. 43 listed as natural flow are also gas wells yielding some naphtha. Other wells produce only gas.
* Includes natural gasoline.
† Interpreted as number finished drilling during year, and not necessarily producers.

trary, but it is believed to be fairly drawn. The basis of the figures is not along the lines commonly followed in the United States, but gives actual footage made during the year, regardless of whether wells were completed during the year or not. Some of the Turner Valley footage, having been in wells outside actual proven areas, would, under United States custom, be classed as "wildcat," and successful completions would be credited as successful wildcat wells.

Fields Outside Turner Valley

Wainwright was discovered in 1923, although its production did not get to a commercial basis immediately. Its production is from a Lower Cretaceous sand of continental deposition at about 2200 feet, the attitude of the sand being horizontal. Six wells produced oil in 1941, and several others would yield a little oil if they were close enough to other producers to permit economical pumping. No drilling was done for several years, but one well has recently been started and others are likely to follow a successful completion. The oil is black, contains a little wax, and runs about 18° to 22° API for the most part. Local topping plants turn out engine distillate and a little roofing asphalt.

Red Coulee was discovered in 1930. Seven wells in Alberta, and a greater number in Montana, were developed as producers by the end of 1932. No further wells have been drilled for some years. Of about 30° API, the oil is hauled 6 miles by trucks for rail shipment to a refinery. Production comes from a sand in Blairmore formation (Lower Cretaceous age, continental deposition) at about 2500 feet. It is a terrace structure and concentrations of oil may in part be due to variations in permeability of the sand.

Vermilion field was discovered in

1939, and there has been quite a drilling play during 1940 and 1941. Production comes from 1850 feet, from a loose sand in Lower Cretaceous formation, continental deposition. The field is somewhat spotty. Some of the failures may have been due to ineffective shut-off of water from above or below. Wells have been drilled from the grass roots to the producing sand in 36 hours, and using a single rock bit from the surface until coring started. The job of putting the wells on production is not so simple. "Tailor made" gravel pack has been tried, with only moderate success. The oil is 14° API and quite viscous, but there is enough gas to bring it into the wells, and even to flow some wells for a short time.

The answer to running sand seems now to be bailing for a time until the first rush of sand is disposed of, after which tubing is run with a fluid-packed pump. Some pumps are operated by small gas engines, using gas from the well as fuel. There has been a delay in obtaining a commercial outlet for the oil. It contains about 3 percent sulphur, probably in a free state, and some emulsion and sand. The oil is not well suited to gasoline production and if used as fuel, the sand would have cut the nozzles used for spraying oil into locomotive boilers. However, early this year, a treating plant started operation, and the treated oil is sold to the railways as fuel. Treatment consists merely of raising the temperature of the oil until the viscosity is reduced enough to drop out sand and most of the water. Some chemical treatment may be in use to help break emulsion.

Princess obtained oil of about 25° API at the top of Paleozoic limestone at 3200 feet. The oil was covered by a gas cap, and there was water beneath. A determined effort was made to shut off the gas and water and two wells produced oil. Others not far distant failed to get commercial oil and production was suspended in February of this year. Another discovery of oil has recently been made near Tilley, about 20 miles south of Princess, but it is too early to comment at length on this discovery.

Other indications of oil, ranging from small showings to wells that produce commercial oil, have been found over a wide area in an immense province, most of which is underlain by sediments of a character suitable for oil deposition.

East flank outcrop, north end of Turner Valley.

—Photo by H. Pollard, Calgary

Exploration

Geophysical methods involving seismic, gravimetric, and to a smaller extent magnetometric apparatus have been used, and in Alberta, wildcat drilling is now scattered from Pouce Coupe to Lundbreck, and eastward to the Saskatchewan boundary. The Pouce Coupe tests are 480 miles north of the international boundary and close to British Columbia. Lundbreck is only 50 miles from the Montana line and in the disturbed belt lying east of the Rockies. Four major oil companies and a number of private interprises are engaged in the tests.

Turner Valley

Turner Valley has had the bulk of the drilling activity, as it has produced the bulk of the oil. At the end of 1940, its proven area extended over a length of about 17 miles, lying in a northwest-southeast direction, parallel with the Rocky Mountains and about 30 miles east of the continental divide. During the year, the proven area was extended ¼ mile south and 2¼ miles north (actually 2 miles north and a mile west).

All wells in northward extension were large producers and the most southerly well was also very good. The field is limited to the west by water at 4300 to 4500 feet below sea level, and at the east of the liquid phase zone is a gas

cap which terminates in a sole fault. The attitude of the producing horizon varies from about 15° from the horizontal near the south end to much steeper dips at a point somewhat south of the most northerly production. At points the limestone may stand nearly vertical in some of the fault blocks, but in general, it is tilted in a west dip as a result of thrust faulting, and the upper edge may be bent over at the eastern limit. In general, there are two principal porous zones, but in some localities, one or the other, or even both may disappear. Small wells are frequently offset by large producers.

Spacing

The Petroleum and Natural Gas Conservation Board enforces a spacing program in Turner Valley of not more than 1 well per legal subdivision of 40 acres. This spacing seems to meet the economic demands. Before this rule was put into effect, there were a few closer locations, and those wells will not pay out. Wells must normally be placed in the center of the 40 acres, but if surface topography demands, and offset owners do not object, the location may be moved within the central circular acre.

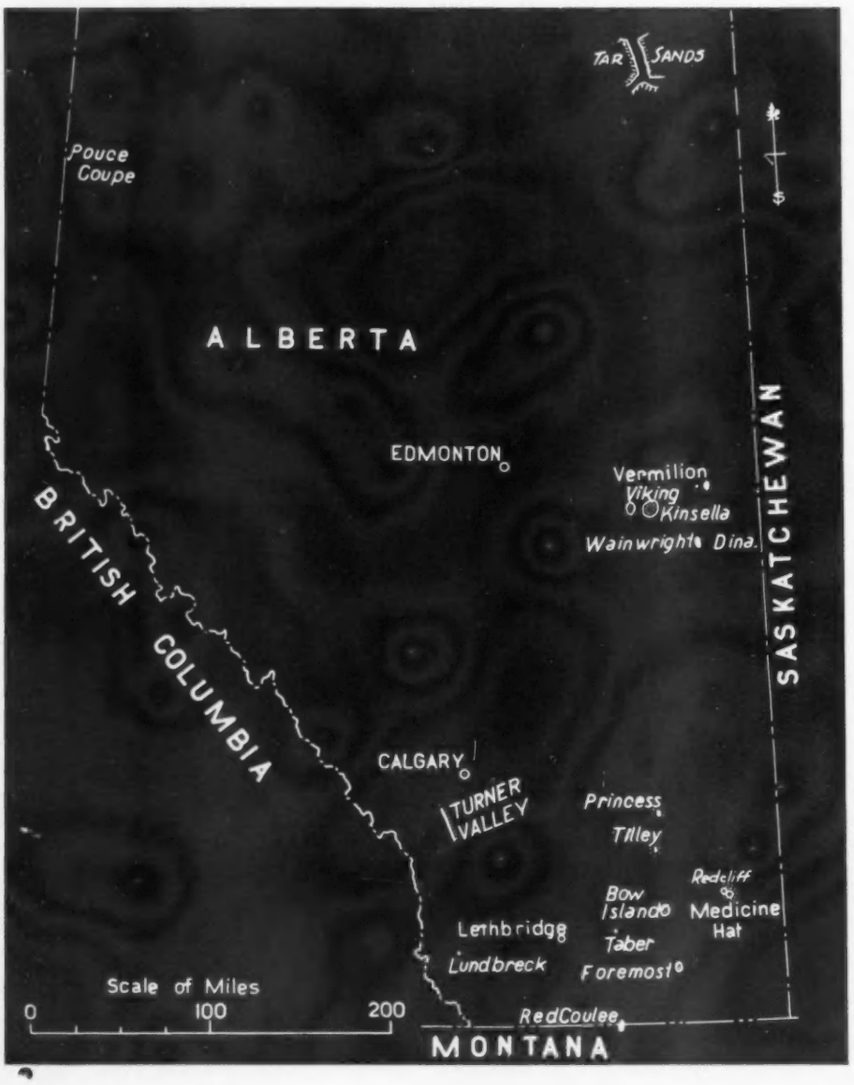
Straight Hole Drilling

Under present regulations, holes may not deviate over 4° from the vertical, and in some cases over 3°. Completion must be within the central 10 acres of a legal subdivision. In shallower fields in the province, 10-acre spacing is in some cases permitted, and with the closer spacing, wells must be completed within the central quarter of the parcel.

Straight-hole drilling has been found far more economical than crooked holes, and a 7500-foot hole in Turner Valley was recently completed in 3½ months.

1941 Completions in Turner Valley

Of 45 wells completed during the year, 41 were oil producers, one was not commercial, one was still working with a stuck packer, and not yet on production, and two found a steeper dip to the limestone than had been expected and got only water.



All wells are treated with acid on completion, the treatments varying from a single wash to perhaps 10 shots of acid. The first day of steady production after acid is taken as initial production and on this basis, the 41 producers averaged 722 barrels initial, with a maximum of 1978 barrels and minimum of 195.

Producing Methods

Production following a period of testing is regulated by the conservation board, and the production characteristics of each well are closely studied before making up monthly allowables. Bottom-hole pressure behavior and gas/oil ratio are carefully considered.

Some wells, when first completed, may require gas lift for a time, but as they age, the gas/oil ratio normally increases until the well flows on its own power. Eventually the yield of oil drops, while gas flow tends to increase.

Depletion Characteristics

Engineers observing Turner Valley, agreed for many years that there was no water drive and that energy to produce oil was wholly derived from gas. We now know that there is water below the oil, but we have no direct evidence as to how far it extends westward. It is most improbable that the reservoir receives accretions of meteoric water, but elastic expansion of water in the reservoir as pressures decrease might cause a little rise in water level. Only one well produces a material quantity of water with oil. It produced some water when first completed and the proportion increased until after 25 months of production, 37 percent of the liquid was water and in spite of efforts to check the water inflow, another three months saw the proportion rise nearly to 60 percent and oil recovery become uneconomic. Whether or not this points to conditions that may come about elsewhere in the field, at least the rise in water level is much less noticeable than the retreat of the upper level of liquid phase oil. From the nature of depletion characteristics, it seems probable that there is a downward coning of the upper limit of liquid toward wells, and in addition there is bleeding of gas dissolved in liquid oil far below the upper limit of liquid oil.

Vapor-phase oil was the principal objective from 1925 to 1936. Over 8 million barrels was captured in separators and 3¾ million barrels in absorption plants to the end of 1941. Loss through inefficient separation above ground might be set at another couple of million barrels, but the quantity of vapor-phase oil condensed and trapped in the gas cap is doubtless very great. Present practice in other fields of this type is to

The importance of Baroid Products as a means to the faster, safer and more economical drilling of today's vital oil wells is emphasized by the fact that operators in many countries continue to use Baroid Products regardless of transportation difficulties.

Baroid Products, properly used, minimize drilling difficulties in both deep and shallow wells for operators throughout the world, and have proved to be especially valuable in foreign fields.

Manufacturing plants and distributing points advantageously located in the United States and Cuba enable the Baroid Sales Division to make Baroid Products readily available, at attractive prices, to operators wherever there is drilling.

For information, prices and terms, communicate with Baroid Sales Division, 830 Ducommun Street, Los Angeles, California.

PATENT LICENSES, unrestricted as to sources of supply of materials but on royalty bases, will be granted to responsible oil companies and operators to practice the inventions of any and / or all of United States patents Nos. 1,575,944; 1,575,945; 1,807,082; 1,991,637 and further improvements thereof. Applications for such licenses should be made to Los Angeles office.

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—Photo by H. Pollard, Calgary

Major Oil Investments 4, North Turner Valley, flowing 30 barrels per hour through broken connection. This well was finished early in January at 7836 feet.

return stripped gas to the formation in order to maintain pressure and prevent losses due to condensation underground.

Liquid-phase oil may be left in the producing horizon to a large percent of total original content due to loss of gas energy. The manner of producing has a great effect on such losses. Sometimes even a 10-percent increase in a well's rate of oil recovery may jump the gas produced at a seriously increased rate, and subsequent efforts to reduce the gas may require prolonged periods of reduced oil production, entirely out of proportion to the temporary gain responsible for the condition.

No recent computations of oil reserves have been made. It is quite apparent that ultimate recovery may be affected to a great extent by production methods.

Gas Developments

Turner Valley gas, after being stripped of fractions that liquefy at atmospheric pressure and temperature, and after scrubbing to reduce sulphur content, reaches a pipe line running from the repressured Bow Island field through Lethbridge and intermediate towns to Calgary. Foremost field also connects with this line and can carry the load temporarily if pipe line repairs are necessary, and is used also during periods of peak demand to improve regulation to consumers.

Edmonton is supplied from Viking and Kinsella fields. Five new wells were drilled within the proven area of Kinsella field in 1941, and with two earlier wells connected to the Edmonton pipe line, the field is carrying a large part of the load.

Medicine Hat and Redcliff use gas produced in and adjoining their communities. One well was drilled in 1941. For the most part, the production is kept at low enough rates per well to maintain a very gradual pressure drop. An exception occurred in the case of an industry owning two wells, and this locality has had a severe pressure drop. The sand is thin and permeability low, permitting such local conditions where sufficient care is not observed.

Several other communities have small gas supplies close at hand, adequate to local needs. During the year, a pipe line was laid to serve Vermilion.

Tar Sands

Exposed along Athabaska River and tributaries are heavy deposits of tar sand in continental or deltaic sediments of Lower Cretaceous age, lying on middle Devonian limestone. Numerous efforts to exploit these deposits failed to attain commercial proportions, but after several years of trial, Abasand Oils succeeded in 1941 in turning out nearly 20,000 barrels, derived from about an equal tonnage of sand. A fire interrupted operations in the fall, but it is understood they will be resumed this season. Quarrying is assisted by use of explosives. A power shovel puts the material on a belt and the belt drops the sand into hot water. On separation from the sand the hydrocarbons are heavier than water as at 60° F. but after one pass through a coil at moderate temperature relative to ordinary cracking, a product comes out at something over 20° API without evolution of gas or coke. This oil may be used for fuel without further treatment, or it may be cracked at higher temperature for production of gasoline and engine distillates. The production is shipped northward as fuel for metal mining operations and enjoys the protection of a fairly high railway tariff against competitive supplies from the south. It is hoped that experience in development for the present northern market may eventually enable this immense source of oil to be made available for shipment southward when conditions demand it. The time for southward shipment may be close and some serious consideration is now being given to that problem.

Posted Prices for Oil

Turner Valley oil is subject to a deduction in the volume as computed to 60° F. of .075 percent to take care of pipe line loss, and producers are paid for oil delivered from stock tanks at the well at the following scale:

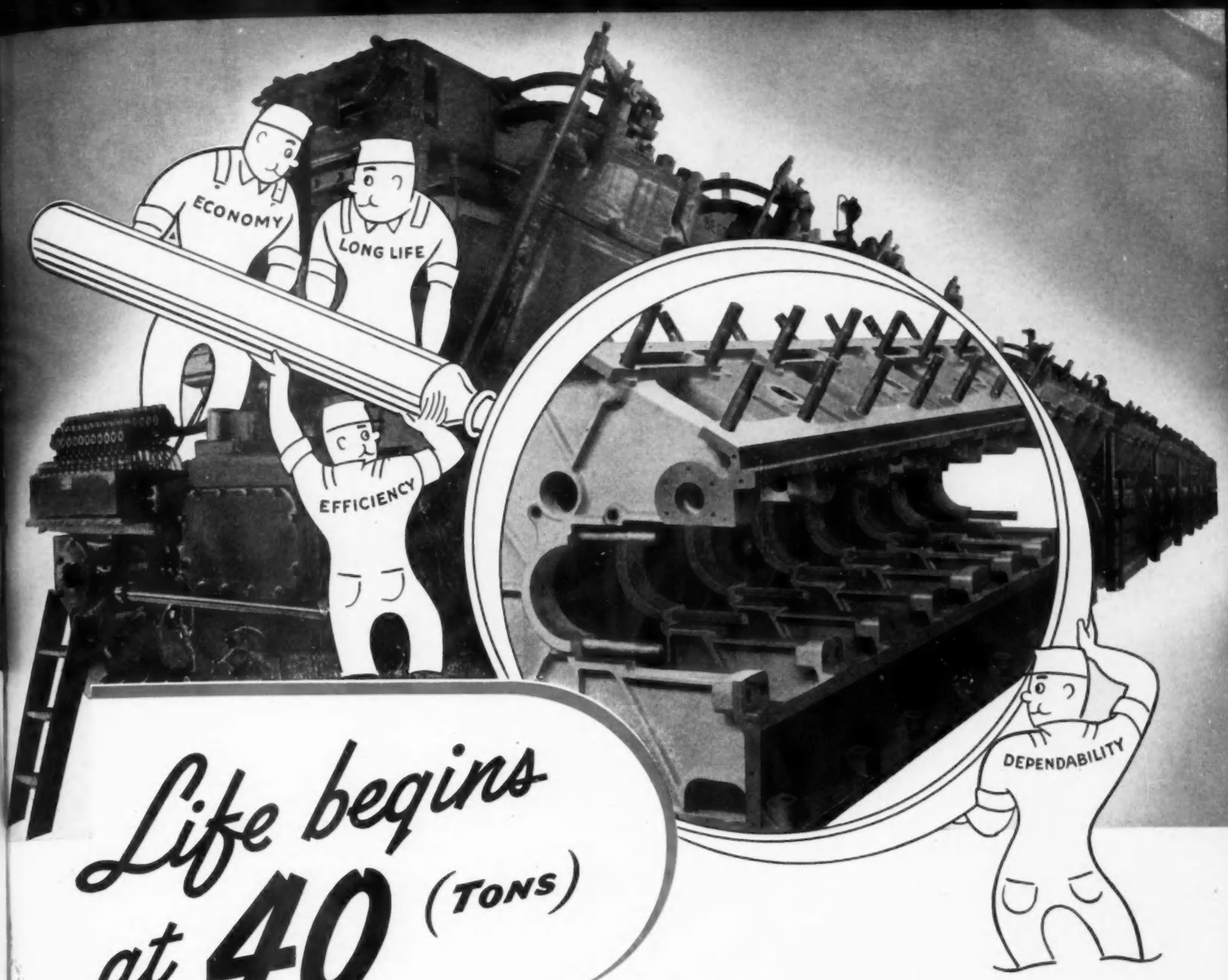
For gravity 33 to 33.9° API $1.35 per barrel, increasing 2 cents per degree up to $1.97 for 64° or greater.

Gasoline obtained from absorption plants is subject to a volume deduction of 2 percent for pipe line loss and is valued at $2.28 for 20-pound Reid vapor pressure, or $2.44 for 17-pound.

Vermilion producers expect a return of 90 cents per barrel of clean oil at stock tanks, but at time of writing, the price appears actually to be subject to adjustment pending a little more experience in cost of hauling and treating the oil.

Red Coulee oil currently yields 72 to 87 cents per barrel, depending on handling charges.

Wainwright oil averages around 70 cents. Hauling, gravity and contractual considerations affect return to various wells.



Life begins at 40 (TONS)

FORTY tons of Meehanite Metal—toughest, strongest kind of iron—form the mighty castings of this 10-cylinder Type G-MV compressor, the rugged skeleton which supplies strength and endurance for a long life of profitable, satisfactory service.

Note the massiveness of the structure, the great steel studs that hold the power cylinders, the unique jaw construction that permits quick and easy removal of main bearings, or even crankshaft, from the side of the unit.

There are other important advantages, too, such as the compact V-angle design, low-pressure Streamlined Scavenging, Silent-Scot fuel system, oil-cooled pistons, pressure lubrication and interchangeable precision-type bearings.

TYPE G-MV ANGLE COMPRESSOR

THE COOPER-BESSEMER CORPORATION
Mount Vernon, Ohio

INDUSTRY'S MOST FLEXIBLE COMPRESSOR

Convertible from gas to diesel fuel, Type G-MV is built in 400, 600, 800 and 1000-hp units, with a full range of compressor cylinder types.

by Cooper-Bessemer

ENGINE BUILDERS SINCE 1833

Technical Oil Societies Aid South American Industry

SOUTH AMERICAN petroleum engineers and geologists are awake to the value of organizations designed to promote the interests of the oil industry and its members. Although moves to create such organizations were initiated prior to 1941, several groups have reached the functioning stage during the last year. They were established to bring about a better exchange of information among South American technical men and to develop programs for expansion of the oil industry in South American countries.

An organization of international scope is the South American Petroleum Institute (Instituto Sudamericano del Petroleo). This group is an outgrowth of the South American Association of Engineers (Union Sudamericana de Asociaciones de Ingenieros), whose board of directors appointed an organizing committee in November, 1940, to formulate by-laws for an oil institute. The committee consisted of Luis V. Migone, Juan Pinilla, Juan L. Albertoni, Enrique P. Canepa, Augustin Maggi and Carlos R. Vegh Garzon. Vegh Garson, general manager of the Uruguayan National Administration of Fuels, Alcohol and Cement, handled final drafting of the by-laws, a report on which was submitted by the committee to President Jose L. Buzzetti of the South American Association of Engineers in August, 1941.

Major objectives of the institute are: promotion and coordination of the study of all phases of the South American petroleum industry, promotion of exchange of information, encouragement of the general adoption of technical standards, and provision of oil specialists to governments and companies seeking their services.

Membership in the South American Petroleum Institute consists of active members, which comprise South American governments and public and private organizations, and private members, who are individuals in the oil industry and in the schools. Other classes may later be admitted. The permanent international council, which governs the institute, consists of the presidents of the governing boards of the national sections.

The institute had planned a meeting last March in Montevideo, Uruguay, to set up the permanent international council but the meeting was postponed because at that time the necessary five national sections had not been created. However, five sections now exist at present, and the postponed March meeting is expected to be held shortly. Location of the headquarters of the institute will be decided on after the meeting. Following is a list of the national sections and officials of each. Unfortunately, information on the composition of the Colombia and Bolivia sections is not available at this time:

President of the Argentine section is Enrique P. Canepa, technical director of the Argentine Yacimientos Petroliferos Fiscales. Directors are: Juan J. Albertoni, Dante Ardigo, Serafin Gonzalez, Dr. Ernesto Longobardi, Ernesto A. Martinelli, Leopoldo Sol, Torquato Di Tella, and Dr. Carlos E. Velarde.

Head of the Chile section is Hector Marchant Blanlot, manager of Llano de Maipo Railroad Company. Directors are: Hernan Bessa, Alberto Cabero H., Marin R. Diez, Roberto Muller H., Carlos Ponce de Leon, F. Thomas, Osvaldo Vergara I., and Manuel Zanartu.

President of the Peru section is Artidoro Alvarado Garrido, director of Mines and Petroleum, Peruvian Ministry of Development. Board members are: Luis F. Diaz, Ricardo Deustua, Jose Balta Hugues, Federico Milne, Alfonso Montero, Dr. Raul Noriega, Augusto Cabrera La Rosa, Wilfredo Pflucker, Oscar Quiroga, and Roberto Valverde.

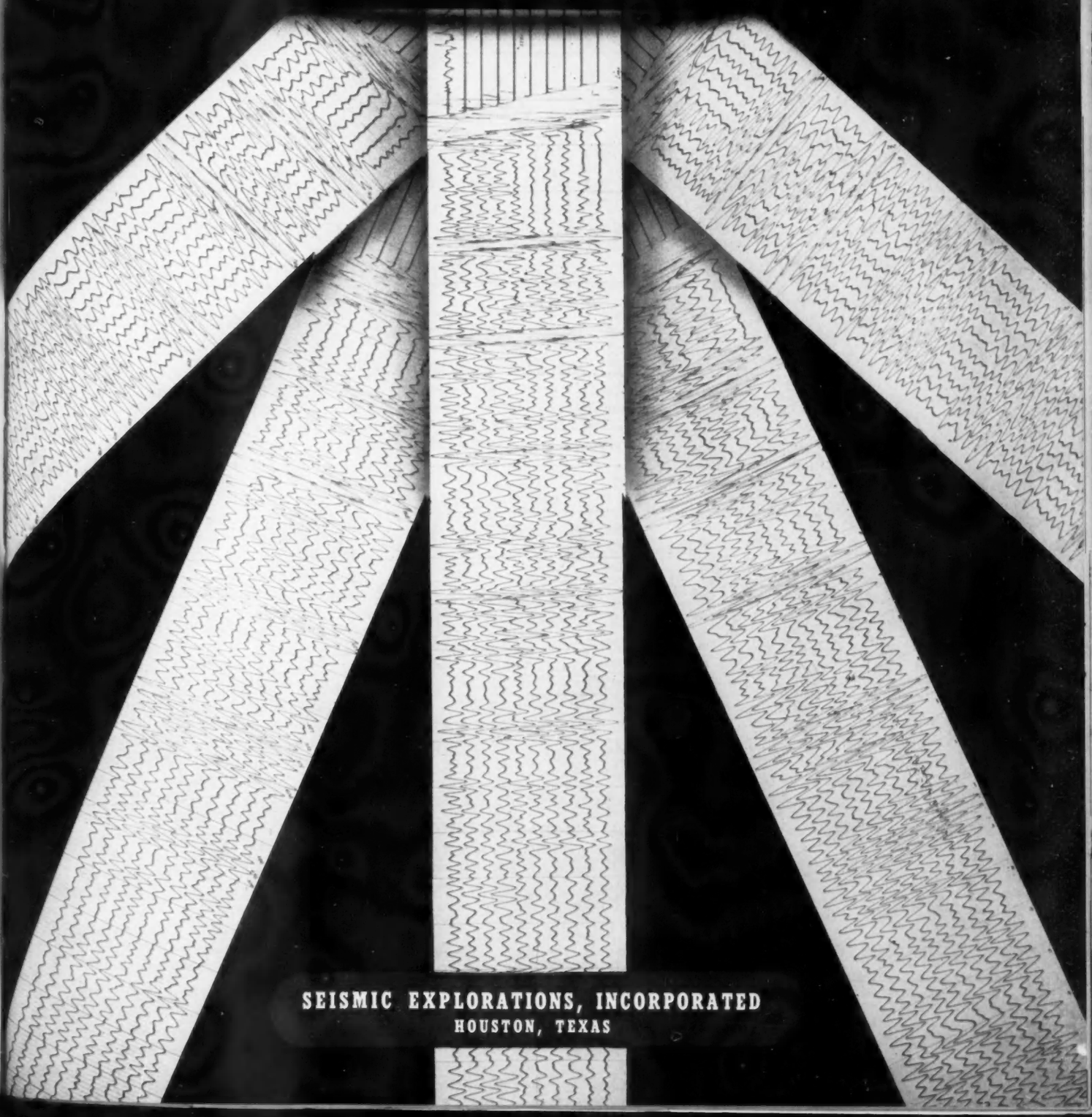
Uruguay section: president, Carlos R. Vegh Garzon, general manager of Uruguayan National Administration of Fuels, Alcohol and Cement; vice president, Angel Goslino. Board members are: Tydeo L. Borges, Jaime A. Botet, Dr. Reynaldo Deambrosis, Ralph Emery, Alfredo D. Levrero, Manuel E. Lugaro, Augustin Maggi, Felix de Medina and German E. Villar. Emery is

EXECUTIVE COMMITTEE, FIRST PAN AMERICAN CONGRESS OF MINING AND GEOLOGICAL ENGINEERING

The Congress met in Santiago, Chile, last January and proposes periodical gatherings. Left to right in the picture are: Americo Albala, secretary; Enrique Vial, director; Marin Rodriguez, president; Roberto Muller H, executive vice president; Osvaldo Vergara, director; Tomas Vila, director.

SEISMIC

SUBSURFACE SURVEYS



SEISMIC EXPLORATIONS, INCORPORATED
HOUSTON, TEXAS

ARTIDORO ALVARADO GARRIDO, president of Peru National Section of South American Petroleum Institute, and Director of Mines and Petroleum, Peruvian Ministry of Development.

CARLOS R. VEGH GARZON, president of Uruguay National Section of South American Petroleum Institute and general manager of Uruguay National Administration of Fuels, Alcohol and Cement.

HECTOR MARCHANT BLANLOT, president of Chile National Section of South American Petroleum Institute and manager of the Llano de Maipo Railroad Company.

general manager of Shell Mex of Uruguay.

President of the Bolivia section is Raul Zumelzu, president of Yacimientos Petroliferos Fiscales of Bolivia. Names of other officials were not available.

Another international gathering of South American oil men occurred in Santiago, Chile, last January when the First Pan American Congress of Mining and Geological Engineering (Primer Congreso Panamericano de Ingenieria de Minas y Geologia) was held. This congress was organized by the Institute of Mining Engineers of Chile under auspices of the Chilean government and the South American Association of Engineers. Objectives of the congress, which is scheduled to be held periodically, are to summarize the progress of the study of minerology and geology of South America, to propose solutions of important problems of the mining and petroleum industries, and to exchange information and ideas of South American engineers and other technical men. Papers were presented at the first congress on exploration, exploitation and refining of oil and probable petroleum reserves of South America.

Officials of the executive committee in charge of the congress were: president, Marin Rodriguez, president of the Institute of Mining Engineers of Chile; executive vice president, Roberto Muller H.; directors, Enrique Vial, Osvaldo Vergara I., and Tomas Vila; secretary, Americo Albala.

Colombian Organizations

Two petroleum associations got under way in Colombia last year. One of these, the Colombian Petroleum Institute (Instituto Colombiano de Petroleos), with headquarters in Bogota, held its first convention in April, 1942. At the convention 54 new members were received, plans for working groups were submitted and approved and a program for future activity was outlined. President of the institute is Felix Mendoza, engineering director of the Fiscal Division, Colombian Ministry of Mines and Petroleum, and a graduate of the oil engineering department of the University of Oklahoma.

The institute is the outgrowth of discussions among young Colombian engineers and geologists early in 1939. Although 1939 and 1940 went by without definite action, a committee was set up last year. Late in 1941 a small group met to consider a body of by-laws drawn up by Mendoza. The final step was taken on December 30 when a meeting resulted in the approval of by-laws and election of officers. Engineers and geologists present at the meeting were: Jorge A. Perry, Luis Arango Velez, Benjamin Alvarado, Camilo Gutierrez, Rafael V. Samper, Hernando

OIL WEEKLY EDITION

BAASH ROSS News

BAASH-ROSS TOOL COMPANY • LOS ANGELES • HOUSTON • NEW YORK

A MONTHLY BULLETIN COVERING NEWS OF EQUIPMENT AND OPERATIONS IN THE PETROLEUM INDUSTRY

WHAT TO LOOK FOR IN DRILL COLLARS ...AND HOW TO BE SURE OF GETTING IT

Many Things Influence Drill Collar ... All Must Be ...

ACCURA... MENT — ... collars ... misalig... causes ... where co... string rot... bends—fr... the other... bending at... pins. *But n... Ross Drill ... survey every ... sure that the ... axis of the join... deviate from th... axis of the collar ... than ½" in 40 fe...*

TOUGHNESS — ... ing the bit, the Dri... lar is constantly sub... to severe impact an... sional strains as th... tational resistance o... bit fluctuates—high ... minute, low the ne... Careful selection of a... steels plus two full len... heat-treatments and ... third localized heat-trea... ment, insure the correc... amount of *toughness* in... every B-R Drill Collar.

HARDNESS—The Drill Collar, following as it does right behind the bit, is constantly rotating against the highly abrasive, fresh-cut walls of the hole where no protective mud-cake has been built up. In heat-treating "Trubore" Drill Collars, special precautions are taken to insure plenty of surface *hardness* to resist this abrasive action.

FOR MAXIMUM ALL-AROUND PERFORMANCE, IT'S BAASH-ROSS "TRUBORES"!

YOUR BAASH-ROSS DRILL COLLARS AND KELLYS HAVE A *Bigger* JOB NOW

The same top-quality alloy steel that goes into the manufacture of your Baash-Ross "Trubore" Drill Collars and Kellys is today finding an even more important job in strengthening the sinews of America's armed might.

Next time you turn to the war news, think to yourself . . .

"Perhaps the drill collar I was unable to get this month went into making the very gun I see in action here.

". . . or it might have gone into making the armor-piercing noses of the bombs that sank the Jap aircraft carrier AKAGI off Midway.

". . . or it might now be a part of an Allied armored unit beating off the enemy in the hot sands of Egypt."

Fact is, we don't know exactly where the steel for that drill collar or kelly of yours is right now. But we do know this . . . wherever it is and whatever it's doing, it's doing the job in a man-sized way. Because Baash-Ross uses only top-quality alloy steels in making its drill collars and kellys—steel that is hard, tough and "hell-for-stout."

So by doing longer with your present drill collars and kellys, you are releasing more of this fine metal for the difficult two-fisted jobs our armed forces need done. And that is the most important work of all right now . . . building an army and a navy and a marine corps that are the best-equipped fighting units in the world!

Official U. S. Navy Photograph.

...ORTANT FACTS ABOUT KELLYS!

...logical that the subject of ...s should bring up talk ...ther end of your drill ...elly end.

...ain you're getting the ...ate for your string of ...ll Collars be sure to ...Ross *"Trubore" Kellys* these Kellys go the ...ame painstaking pre- careful selection of ...ntrol of heat-treat- ...ade the "Trubore" ...rever men drill for

...Ross you can get ...lly you prefer...

...the old "stand- ...ral drilling con-

...AL—the best ... buy for all- ...g efficiency.

...—a popular ...with packers ...under pres-

...can supply ... kelly you ...ask *us* for ...ich of the ...ern drill- *...give you ...r dollar* ...we can

...y an

...om- ...he

...ATION AREA - of vital im- ...ance with modern high-volume pumps.

...that the joints ...accurately that their ... axis with respect to the ...ual axis of the prod... does not deviate more than ½" *in 40 feet*... and the straightness does not deviate more than ⅛" from true at any point *over the entire length*...and you have some idea of the *all around* balance that makes Baash-Ross "Trubores" the pick of the industry.

These things are hard to *see* in a drill collar, but there's an easy way to KNOW you are getting them—specify *Baash-Ross "Trubore Drill Collars!*

THEN REMEMBER THIS: You can use the hex for *every* type of drilling operation... BOTH regular and pressure work *—without change!*

Regardless of the *type* of kelly you plan to buy, there is a Baash-Ross "Trubore" to meet your requirements. But before you buy *any* kelly, investigate the Baash-Ross HEXAGONAL. Your nearest Baash-Ross representative has complete details...or write us direct!

ENRIQUE P. CANEPA, president of Argentine National Section of South American Petroleum Institute and Technical Director of Yacimientos Petroliferos Fiscales.

RAUL ZUMELZU, president of Bolivia National Section of South American Petroleum Institute and President of Yacimientos Petroliferos Fiscales of Bolivia.

FELIX MENDOZA, president of Colombian Petroleum Institute and Engineering Director of the Fiscal Division, Colombian Ministry of Mines and Petroleum.

Madero Paris, Roberto Sarmiento, Gabriel Cuervo Araoz, and Felix Mendoza.

Officers of the institute in addition to Mendoza are: vice president, Alberto Lobo Guerrero, consulting engineer in the firm of Perry, Lobo and Guerrero; vocals, Benjamin Alvarado, geologist in the Geological Service of the Colombian Ministry of Mines and Petroleum, and Luis Arango Velez, petroleum engineer with Tropical Oil Company; secretary-treasurer, Gabriel Cuervo Araoz, petroleum engineer in the Fiscal Division, Colombian Ministry of Mines and Petroleum.

Membership last May had reached about 80, and President Mendoza declared at that time that the roster is expected to approach 200 soon. The work the institute will do is planned to favor both the nation and the oil industry. Publications will be issued in the form of technical papers and the other matter. A feature of these publications will be a glossary of terms used in the oil industry. The institute expects to become a correspondent member of similar organizations outside the country.

The other oil organization established in Colombia last year is the Colombian Federation of Mines and Petroleum (Federacion Colombiana de Minas y Petroleos). President is Dr. Roberto Urdaneta Arbelaez, who succeeded the first incumbent, General Mariano Ospina Vasquez, after Ospina's death a few months ago. Urdaneta is a lawyer with special training in oil and mining law. He was one-time minister of foreign affairs during the administration of President Olaya Herrera, 1930-1934, and ambassador to Peru during 1934-1940.

As is apparent from its name the federation is not solely concerned with the oil industry, being devoted to Colombian minerals in general. The announced objectives of this organization are broad. They include such aims as representing and protecting the national interest in mining and petroleum, encouraging development of these industries, assisting the government in meeting their needs, maintaining close contact with foreign and domestic manufacturers of mining and petroleum equipment for the purpose of developing efficient and economical methods of production, fostering immigration of technical experts from foreign countries, and developing the study of mining and oil regions of Colombia.

Officials of the federation in addition to President Urdaneta are: vice president, Enrique Moreno Quevedo; manager, Gustavo Arbelaez Hurtado; directors, Alfonso Villegas Restrepo, Alberto Goenaga, Miguel Samper Herrera, Gabriel Durana Camacho, Humberto Gomez Naranjo, Georges Martin, Enrique Moreno Quevedo, and Jorge Villa Carrasquilla.

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Have a look inside one of those modern, spic-and-span Bethlehem Supply stores. You'll find that more than just the store itself is up to the minute. You'll find large stocks of the latest types of supplies and equipment, covering practically everything you may need, from oilers to well heads, and drill pipe.

And you'll find a group of field managers, salesmen, and engineers who know oil-country conditions and problems as well as oil-field equipment. The information and "know-how" that these men possess is yours to draw on. They are ready, able and eager to help you in any way possible.

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BETTER BE SAFE THAN SORRY

GUIBERSON TOOLS

They'll Help Solve Your War Problem of

GUIBERSON TYPE K SWAB

GUIBERSON Swabs Produce Wells at Capacity

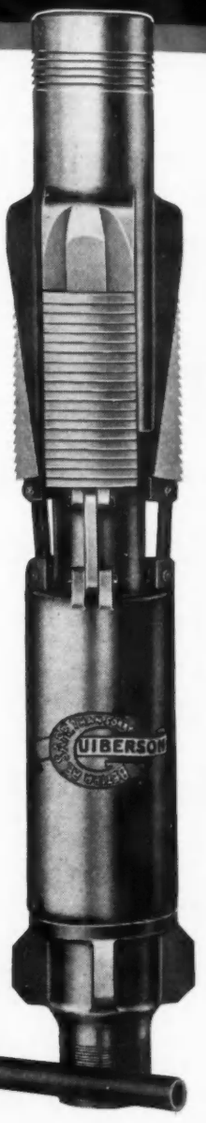
It is highly important that production of present wells be maintained at high levels. Wartime economy requires that this be accomplished at lowest possible cost in materials, time and money through use of the most efficient equipment.

The GUIBERSON Swab has long been recognized as the most efficient on the market. It falls faster than any other swab and pulls more fluid per trip and per cup life, resulting in important savings both in swabbing time and replacement costs. Use of this swab will go far towards keeping your wells at capacity production.

GUIBERSON Tubing Catchers Safeguard Tubing Strings

There is no more urgent requirement in the program of war economy than that of conserving steel. Any safety device that can be placed on or in a well at nominal cost, to protect equipment — and especially pipe, the heavy-tonnage item in production — is today of tremendous importance.

The GUIBERSON Tubing Catcher's function in safeguarding tubing strings from falling, not only due to overloading or faulty threads, but possibly even on account of enemy action — is more important today than ever in the past. Every string of tubing should be equipped with a GUIBERSON Catcher.



GUIBERSON TYPE E TUBING CATCHER

GUIBERSON TYPE B SPIDER

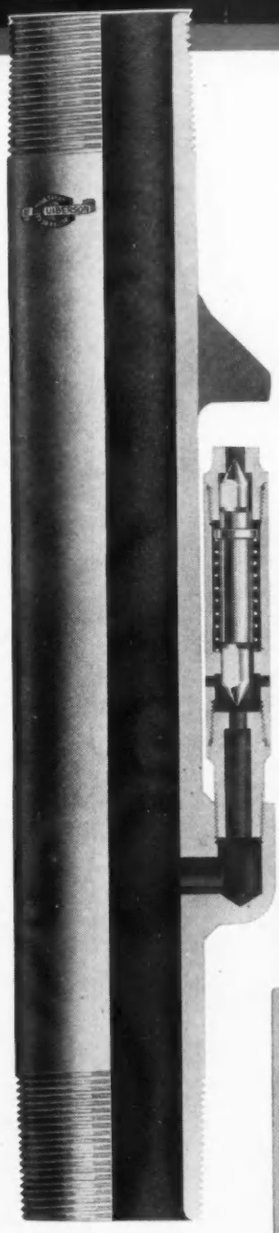
GUIBERSON Type B Spider Handles Tubing with Safety

This tool provides two wartime needs: (1) it is a highly efficient and durable spider at a low price; (2) It assures safety of tubing while being handled, for it is strong and dependable, and its large slip area assures full support of tubing walls and undamaged tubing.

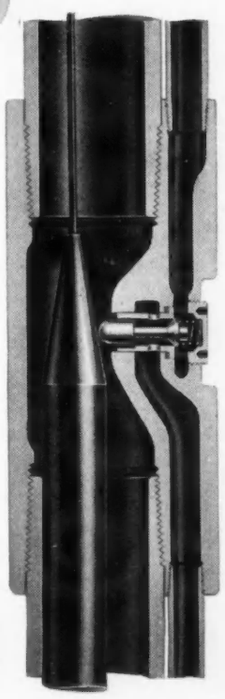
Expert engineering and exhaustive tests have achieved strength that can be depended on to carry the heaviest tubing loads, with light weight that assures utmost handling ease. The weight in all tubing sizes is 130 pounds or less. Slips are light and easy to use. Recess on top flange holds slips securely when not in bowl.

LS ARE "GOOD NEIGHBORS

...Producing at CAPACITY with ECONOMY



GUIBERSON TYPE C FLOW VALVE



INTERMITTER VALVE FOR BOTTOM-HOLE FLUID LIFT

GUIBERSON Gas Lift Equipment Ideal for Wartime Production

The ideal system for wartime oil production is that which offers maximum efficiency and uses a minimum of materials. GUIBERSON Gas Lift Equipment accurately meets that description. It offers definitely the most economical system yet developed for producing oil.

The GUIBERSON Type C Flow Valve operates solely by differential pressures, both in opening and closing. Positive in operation, its double-acting piston is the only moving part. Unaffected by velocity of fluid, this valve opens only when head of oil is heavy enough to establish the pre-determined differential—closes promptly after gas has lifted the head of oil. A trained staff of Field Engineers is at your service.

The GUIBERSON Bottom-Hole Fluid Lift is designed to produce wells of either low fluid levels or low productivity. It is a complete gas-lift system for producing wells through the stripper stage, and will strip the last drop of oil from the well without the purchase of other lifting equipment. The method is outstanding for Simplicity, Efficiency, Economy.

GUIBERSON Control-Head Packers Protect Wells in Wartime

GUIBERSON Control-Head Packers offer definite wartime protection to oil wells. If surface connections of wells should be destroyed by enemy action or other causes, — a GUIBERSON Control-Head Packer installed in the well will (1) Shut off the annular space between tubing and casing and prevent the well from flowing wild through the casing. (2) Prevent well from catching on fire. (3) Prevent tubing from dropping and being damaged.

Type C-1 shown has 3" vertical valve opening and single packer rubber, but other types are offered for every purpose.

GUIBERSON also manufactures Drilling Heads, Oil Savers, Semi-Automatic Spiders, Bottom Hole Plugs, Quick-Change Unions. For details see Guiberson Section, Composite Catalog, or write

THE GUIBERSON CORPORATION

DALLAS, TEXAS, U.S.A.

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GUIBERSON TYPE C-1 CONTROL-HEAD PACKER

World Crude Oil Production, by Countries, by Years

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: *Mineral Resources* and *Minerals Yearbook*, except as otherwise indicated.)

	EUROPE													AFRICA			
YEAR	Albania	Czechoslovakia	England	France	Germany	Austria	Hungary	Italy	Poland	Roumania	[B]U.S.S.R. (Russia)	Other Europe	[B]Total Europe	Egypt	Algeria	Other Africa	Total Africa
1857										2			2				
1858										4			4				
1859										4			4				
1860								[D]		9			9				
1861								[D]		17			17				
1862								[D]		23			23				
1863								[D]		28	41		69				
1864								[D]		33	65		98				
1865								2		39	67		108				
1866								1		42	83		126				
1867								1		51	120		172				
1868								[D]		56	88		144				
1869								[D]		59	202		261				
1870								[D]		84	204		288				
1871								[D]		90	165		255				
1872								[D]		91	185		276				
1873								[D]		104	475		579				
1874								1	150	103	583		837				
1875								1	158	108	697		964				
1876								3	164	111	1,321		1,599				
1977								3	170	108	1,801		2,082				
1878								4	176	109	2,401		2,690				
1879								3	215	110	2,761		3,089				
1880					9			2	229	115	3,001		3,356				
1881					29			1	287	122	3,601		4,040				
1882					58			2	330	136	4,538		5,064				
1883					27			2	365	139	6,002		6,535				
1884					46			3	408	211	10,805		11,473				
1885					41			2	465	193	13,925		14,626				
1886					74			2	306	168	18,006		18,556				
1887					74			1	344	182	18,368		18,969				
1888					85			1	467	219	23,049		23,821				
1889					68			1	515	298	24,609		25,491				
1890					108			3	659	383	28,691		29,844				
1891					109			8	631	488	34,573		35,809				
1892					101			18	646	593	35,775		37,133				
1893					100			19	693	535	40,457		41,804				
1894					123			21	949	508	36,375		37,976				
1895					121			26	1,453	576	46,140		48,316				
1896					145			18	2,444	543	47,221		50,371				
1897					166			14	2,226	571	54,399		57,376				
1898					184			15	2,376	776	61,610		64,961				
1899					192			16	2,314	1,426	65,955		69,903				
1900					358			12	2,347	1,629	75,780		80,126				
1901					314			16	3,251	1,678	85,168		90,427				
1902					354			19	4,142	2,060	80,540		87,115				
1903					446			18	5,235	2,763	75,591		84,053				
1904					637			26	5,947	3,599	78,537		88,746				
1905					561			44	5,766	4,421	54,960		65,752				
1906					579			54	5,468	6,378	58,897		71,376				
1907					757			60	8,456	8,118	61,851		79,242				
1908					1,009			51	12,612	8,252	62,187		84,111				
1909					1,019			42	14,933	9,327	65,970		91,291				
1910					1,032			51	12,673	9,724	70,337		93,817				
1911					1,017			75	10,519	11,108	66,184		88,903	21			21
1912					1,031			54	8,535	12,976	68,019		90,615	214			214
1913					857			47	7,818	13,555	62,834		85,111	98			98
1914					781			40	6,436	12,827	67,020		87,104	753	1		754
1915					703			44	5,352	12,030	68,548		86,677	212	4		216
1916					656			51	6,587	8,945	65,817		82,056	404	8		412
1917				[J]	642			41	6,228	3,721	63,072		73,704	943	9		952
1918				363	270			35	6,032	8,730	27,168		42,598	1,935	7		1,942
1919		48	2	334	265			35	6,096	6,618	31,752		45,150	1,517	5		1,522
1920		69	3	356	246			35	5,607	7,435	25,430		39,181	1,042	4		1,046
1921		94	3	389	274			32	5,167	8,368	28,968		43,295	1,255	3		1,258
1922		120	1	496	319			31	5,227	9,843	35,692		51,729	1,188	9		1,197
1923		74	1	494	346			34	5,402	10,867	39,147		56,365	1,054	9		1,063
1924		76	2	497	406			39	5,657	13,369	45,355		65,401	1,122	11		1,133
1925		158	3	459	541			61	5,960	16,650	52,448		76,280	1,226	12		1,238
1926		150	2	478	653			41	5,844	23,314	64,311		94,793	1,188	9		1,197
1927		112	2	504	663			47	5,342	26,368	77,018		110,056	1,267	8		1,275
1928		94	1	512	630			46	5,492	30,773	[G]84,745		122,293	1,842	8		1,850
1929		93		535	704			45	4,988	34,758	[G]99,507		140,630	1,868	20		1,888
1930	[A]	157	[D]	523	1,182			59	4,904	41,624	[G]125,555		174,004	1,996	16		2,012
1931		134	[F]	520	1,606			124	4,662	49,127	162,842		219,015	2,038	[F]		2,038
1932		126	[F]	530	1,608			208	4,116	53,815	154,367		214,770	1,895	[F]		1,895
1933	11	122	[F]	562	1,665			204	4,072	54,020	154,840		215,496	1,663	[F]		1,663
1934	10	178	[F]	557	2,187			151	3,913	62,063	174,318		243,377	1,546	[F]		1,546
1935	41	133	[F]	541	2,996	44		119	3,812	61,310	182,386	2	251,384	1,301	[F]	4	1,305
1936	273	127	[F]	503	3,115	50		123	3,789	63,659	186,206	1	257,846	1,278	[F]	4	1,282
1937[K]	619	123	[F]	502	3,176	221	16	110	3,716	52,452	193,241	4	254,180	1,196	[F]	22	1,218
1938[K]	752	130	[F]	513	3,861	383	288	101	3,763	48,487	204,956	9	263,243	1,581	[F]	27	1,608
1939[K]	934	120	[F]	500	4,487	693	1,103	91	3,898	45,483	216,866	10	274,185	4,666	[F]	27	4,693
1940[H]	1,497	119	[F]	496	4,544	719	1,755	57	3,891	42,182	218,600	10	273,870	6,053	[F]	27	6,080
1941[H]	1,381	109	[F]	479	4,438	692	2,474	46	3,319	38,147	238,150	10	289,245	7,659	[F]	27	7,686
Total	5,518	2,666	20	11,643	109,599	2,802	6,739	2,813	266,114	952,140	4,643,539	46	5,947,732	52,021	143	136	52,302

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] All figures for 1940 and 1941 are from U. S. Bureau of Mines publication, "International Petroleum Trade," for March 31, 1942. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany. [K] Figures for 1937, 1938, and 1939 as published in Minerals Yearbook, Review of 1940, are here revised to show corrections indicated by Bureau of Mines in "International Petroleum Trade," for March 31, 1942, as follows: 1937, Mexico revised; 1938, Hungary and Mexico revised; and 1939, revisions made for Hungary, Roumania, Russia, Mexico, Colombia, and Venezuela.

South American Oil Map

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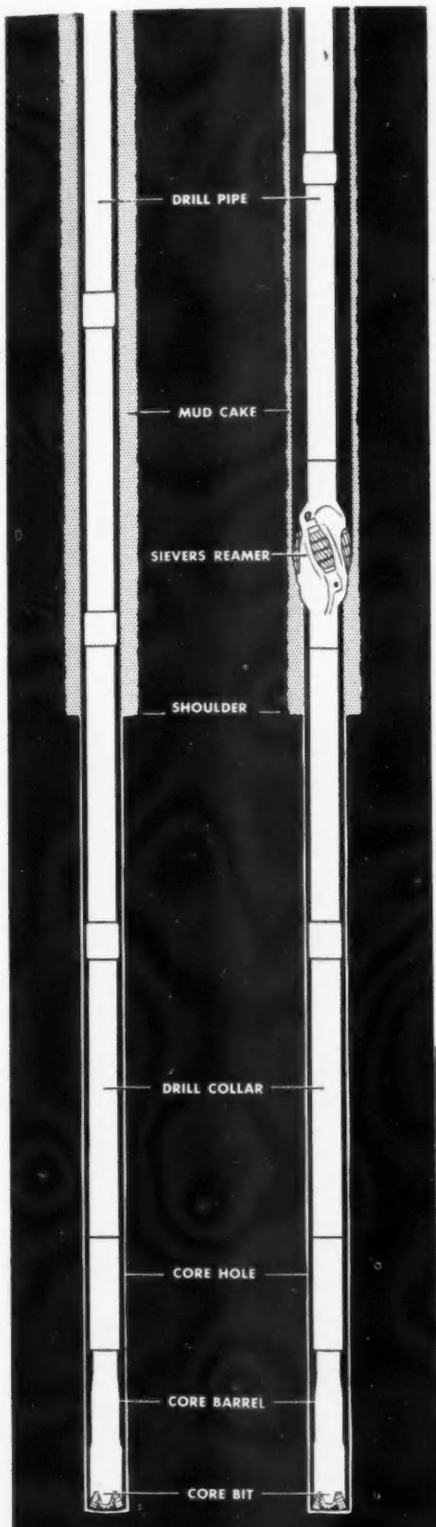
World Crude Oil Production, by Countries, by Years

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: *Mineral Resources* and *Minerals Yearbook*, except as otherwise indicated.)

	NORTH AMERICA						SOUTH AMERICA							
YEAR...	Canada	Mexico	Trinidad	United States	Other North America	Total North America	Argentina	Bolivia	Colombia	Ecuador	Peru	Venezuela	Other South America	Total South America
1857														
1858														
1859				2		2								
1860				500		500								
1861				2,114		2,114								
1862	12			3,057		3,069								
1863	83			2,611		2,694								
1864	90			2,116		2,206								
1865	110			2,498		2,608								
1866	175			3,598		3,773								
1867	190			3,347		3,537								
1868	200			3,646		3,846								
1869	220			4,215		4,435								
1870	250			5,261		5,511								
1871	270			5,205		5,475								
1872	308			6,293		6,601								
1873	365			9,894		10,259								
1874	169			10,927		11,096								
1875	220			8,788		9,008								
1876	312			9,133		9,445								
1877	312			13,350		13,662								
1878	312			15,397		15,709								
1879	575			19,914		20,489								
1880	350			26,286		26,636								
1881	275			27,661		27,936								
1882	275			30,350		30,625								
1883	250			23,450		23,700								
1884	250			24,218		24,468								
1885	250			21,859		22,109								
1886	584			28,065		28,649								
1887	526			28,283		28,809								
1888	695			27,612		28,307								
1889	705			35,164		35,869								
1890	795			45,824		46,619								
1891	755			54,293		55,048								
1892	780			50,515		51,295								
1893	798			48,431		49,229								
1894	829			49,344		50,173								
1895	726			52,892		53,618								
1896	727			60,960		61,687					47			47
1897	710			60,476		61,186					71			71
1898	758			55,364		56,122					71			71
1899	808			57,071		57,879					89			89
1900	913			63,621		64,534					274			274
1901	757	10		69,389		70,156					275			275
1902	531	40		88,767		89,338					287			287
1903	487	75		100,461		101,023					278			278
1904	553	126		117,081		117,760					290			290
1905	634	251		134,717		135,602					373			373
1906	569	502		126,494		127,565					531			531
1907	789	1,005		166,095		167,889	[D]				751			751
1908	528	3,933	[D]	178,527		182,988	12				945			957
1909	421	2,714	57	183,171		186,363	18				1,411			1,429
1910	316	3,634	143	209,557		213,650	20				1,258			1,278
1911	291	12,553	285	220,449		233,578	13				1,465			1,478
1912	243	16,558	437	222,935		240,173	47				1,752			1,799
1913	228	25,696	504	248,446		274,874	131				2,071			2,202
1914	215	26,235	644	265,763		292,857	276				1,837			2,113
1915	215	32,911	750	281,104		314,980	513				2,579			3,092
1916	198	40,546	929	300,767		342,440	867				2,593			3,460
1917	214	55,293	1,602	335,316		392,425	1,218			57	2,577	120		3,972
1918	305	63,828	2,082	355,928		422,143	1,353			[E]60	2,527	333		4,273
1919	241	87,073	1,841	378,367		467,522	1,331			[E]60	2,628	425		4,444
1920	196	157,069	2,083	442,929		602,277	1,651			[E]60	2,817	457		4,985
1921	188	193,398	2,354	472,183		668,123	2,036		67	[E]60	3,699	1,433		7,295
1922	179	182,278	2,445	557,531		742,433	2,866		323	[E]60	5,314	2,201		10,764
1923	170	149,585	3,051	732,407		885,213	3,400		425	87	5,699	4,201		13,812
1924	161	139,678	4,057	713,940		857,836	4,639		445	[E]100	8,379	9,042		22,605
1925	332	115,515	4,387	763,743		883,977	6,336		1,007	160	9,232	19,687		36,422
1926	364	90,421	4,971	770,874		866,630	7,851		6,444	214	10,762	36,911		62,182
1927	477	64,121	5,380	901,129		971,107	8,630		15,014	537	10,127	63,134		97,442
1928	624	50,151	7,684	901,474		959,933	9,070		19,897	1,084	12,006	105,749		147,806
1929	1,117	44,688	8,716	1,007,323		1,061,844	9,391	[D]	20,385	1,381	13,422	137,472		182,051
1930	1,522	39,530	9,419	898,011		948,482	9,002	56	20,346	1,553	12,449	136,669		180,075
1931	1,543	33,039	9,744	851,081		895,407	11,709	25	18,237	1,762	10,089	116,613		158,435
1932	1,044	32,805	10,126	785,159		829,134	13,139	44	16,414	1,597	9,899	116,541		157,634
1933	1,145	34,001	9,561	905,656	23	950,386	13,691	112	13,158	1,620	13,257	117,720		159,558
1934	1,417	38,172	10,894	908,065	28	958,576	14,024	159	17,341	1,637	16,314	136,103		185,578
1935	1,447	40,241	11,671	996,596	47	1,050,002	14,297	164	17,598	1,732	17,067	148,254		199,112
1936	1,500	41,028	13,237	1,099,687	62	1,155,514	15,458	105	18,756	1,942	17,593	154,794		208,648
1937[K]	2,944	46,907	15,503	1,279,160	33	1,344,547	16,355	122	20,599	2,161	17,457	186,230		242,924
1938[K]	6,966	38,506	17,737	1,214,355	78	1,277,642	17,076	226	21,582	2,246	15,839	188,174		245,143
1939[K]	7,838	42,898	19,270	1,264,962	112	1,335,080	18,613	215	23,857	2,313	13,508	206,470		264,976
1940[H]	8,591	44,036	20,219	1,353,214	142	1,426,202	20,609	288	25,593	2,349	12,126	185,570		246,535
1941[H]	10,125	43,837	21,211	1,404,182	150	1,479,505	21,763	230	24,553	1,557	11,922	223,784		283,809
Total	74,557	2,034,887	222,994	25,210,600	675	27,543,713	247,405	1,746	300,221	26,389	275,957	2,298,087		3,151,625

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] All figures for 1940 and 1941 are from U. S. Bureau of Mines publication, "International Petroleum Trade," for March 31, 1942. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany. [K] Figures for 1937, 1938, and 1939 as published in Minerals Yearbook, Review of 1940, are here revised to show corrections indicated by Bureau of Mines in "International Petroleum Trade," for March 31, 1942, as follows: 1937, Mexico revised; 1938, Hungary and Mexico revised; and 1939, revisions made for Hungary, Roumania, Russia, Mexico, Colombia, and Venezuela.



THE SIEVERS REAMER

Improves Core Recovery, Reduces Mud Cake, Saves Reconditioning Time

In coring operations, the core hole is generally drilled ahead several hundred feet with a small diameter core bit before it is enlarged to full size.

The double-sized hole thus produced often causes difficulties. The tendency of mud to cake on the walls of the large hole has, in several instances, been so severe that the entire lower part of the hole has been lost. More frequently, the mud deposit chokes back the diameter of the large hole to the approximate diameter of the core hole (as illustrated at far left) necessitating an extra reaming operation which can be easily avoided...

THE SOLUTION: Run a Sievers Reamer in the drill string so that it keeps the large hole reamed to full size. Each time the core barrel is brought out, the reamer is simply moved up the string a short distance to keep it above the small diameter core hole. This application has several advantages...

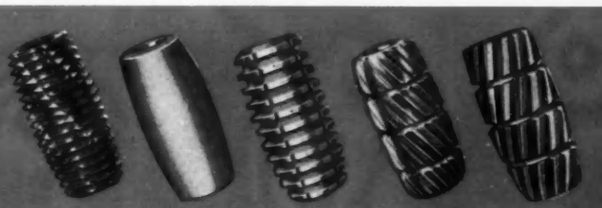
1 **It prevents excessive mud cake from forming, keeping the large hole to its full diameter at all times.**

2 **It eliminates the possibility of choking core hole with sloughed mud—which often causes the bit to drill off into the walls, losing the original footage as well as starting a new hole.**

3 **It reduces excessive vibration and stabilizes the drill string above the core barrel.**

4 **It speeds up drilling time by eliminating the need for reconditioning the hole at frequent intervals.**

5 **It reduces the chance of sloughed mud and cavings sticking the pipe or bridging the hole at the shoulder.**



Sievers Reamer Cutters are made in types for all reaming and stabilizing applications. The various cutter designs shown above—available in any Reamer size—insure maximum reaming or stabilizing efficiency in any formation encountered. For details on the cutter design recommended for various applications, see your nearest Security Engineering Company representative, or write direct.

All Sievers Reamers have FORGED STEEL BODIES. They are available in all types and sizes of tool joint connections. Circulation hole diameters range from ¾" in the 3" bodies to 3 1/16" A.P.I. Full Hole in bodies of larger sizes.

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Sievers Reamers ★ Securaloy ★ Security Drillable Products

World Crude Oil Production, by Countries, by Years

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: *Mineral Resources* and *Minerals Yearbook*, except as otherwise indicated.)

	ASIA															
YEAR	Bahrein Island	[A]Burma	India, British	Iran (Persia)	Iraq	Japan (Incl. Taiwan)	Netherland India	Sakhalin	Br. Borneo (Sarawak & Brunei)	Saudi Arabia	Other Asia	[C]Total Asia	Australia and New Zealand	World Undistributed	World Total	Percent Pro. by U.S.
1857															2	
1858															4	
1859															6	31
1860															509	98
1861															2,131	99
1862															3,092	99
1863															2,763	94
1864															2,304	92
1865															2,716	92
1866															3,899	92
1867															3,709	90
1868															3,990	91
1869															4,696	90
1870															5,799	91
1871															5,730	91
1872															6,877	92
1873															10,838	91
1874															11,933	92
1875						5						5			9,977	88
1876						7						7			11,951	83
1877						10						10			15,754	85
1878						18						18			18,417	84
1879						23						23			23,601	84
1880						26						26			30,018	88
1881						17						17			31,993	86
1882						15						15			35,704	85
1883						20						20			30,255	78
1884						28						28			35,969	67
1885						30						30			36,765	59
1886						38						38			47,243	59
1887						29						29			47,807	59
1888						37						37			52,165	53
1889			94			53						147			61,507	57
1890			118			52						170			76,633	60
1891			190			53						243			91,100	60
1892			242			69						311			88,739	57
1893			299			106	600					1,005			92,038	53
1894			327			173	688					1,188			89,337	55
1895			372			170	1,216					1,758			103,692	51
1896			430			237	1,427					2,094			114,199	53
1897			546			262	2,552					3,360			121,993	50
1898			542			319	2,964					3,825			124,979	44
1899			941			539	1,796					3,276			131,147	44
1900			1,079			871	2,253					4,203			149,137	43
1901			1,431			1,117	4,014					6,562		20	167,440	41
1902			1,617			996	2,430					5,043		26	181,809	49
1903			2,510			1,209	5,770					9,489		36	194,879	52
1904			3,385			1,219	6,508					11,112		40	217,948	54
1905			4,137			1,347	7,850					13,334		30	215,091	53
1906			4,016			1,564	8,181					13,761		30	213,263	59
1907			4,344			1,718	9,983					16,045		30	263,957	63
1908			5,047			1,871	10,283					17,201		30	285,287	63
1909			6,677			1,887	11,042					19,606		20	298,709	61
1910			6,138			1,829	11,031					18,998		20	327,763	64
1911			6,451			1,737	12,173					20,361		20	344,361	64
1912			7,117			1,659	10,846					19,622		20	352,443	63
1913			7,930	1,857		1,940	11,172		141			23,040		20	385,345	64
1914			7,410	2,910		2,636	11,422		318			24,696		20	407,544	65
1915			8,202	3,616		2,928	11,920		392			27,058		10	432,033	65
1916			8,491	4,477		2,963	12,547		629			29,107		25	457,500	66
1917			8,079	7,147		2,861	13,180		542			31,809		29	502,891	67
1918			8,188	8,623		2,441	12,778		504			32,534		25	503,515	71
1919			8,736	10,139		2,238	15,508		596			37,217		20	555,875	68
1920			8,375	12,230		2,221	17,529		1,020			41,375		20	688,884	64
1921			8,734	16,673		2,233	16,958	2	1,411			46,011		20	766,002	62
1922			8,529	22,247		2,055	17,066	7	2,849			52,753		22	858,898	65
1923			8,406	25,230		1,804	19,870	9	3,940			59,259		24	1,015,736	72
1924			8,416	32,373		1,814	20,473	80	4,163			67,319		24	1,014,318	70
1925			8,274	35,038		1,915	21,422	87	4,257			70,993		23	1,068,933	71
1926			8,011	35,842		1,785	21,243	181	4,942			72,004		17	1,096,823	70
1927			8,032	39,688	338	1,789	27,459	440	4,943			82,689		13	1,262,582	71
1928			8,741	43,461	713	1,944	32,118	677	[I]5,223			92,877		15	1,324,774	68
1929			8,747	42,145	798	2,023	39,279	[G]1,134	5,290			99,416		38	1,485,867	68
1930			8,292	45,828	913	1,950	41,729	[G]1,805	4,907			105,424		40	1,410,037	64
1931			8,200	44,376	830	2,050	35,539	2,734	3,854			97,583		54	1,372,532	62
1932			8,817	49,471	836	1,630	39,001	2,631	3,796			106,182		62	1,309,677	60
1933	31		8,743	54,392	917	1,455	42,606	2,338	4,490			114,972		71	1,442,146	63
1934	285		10,503	57,851	7,689	1,834	46,925	2,881	5,140			133,108		96	1,522,281	60
1935	1,265	7,181	2,038	57,273	27,408	2,249	47,171	2,545	5,546			152,676	5	4	1,654,488	60
1936	4,645	7,588	1,978	62,718	30,406	2,440	50,025	3,212	5,209	20		168,241	5	4	1,791,540	61
1937[K]	7,762	7,848	2,162	77,804	31,836	2,488	56,724	3,656	6,009	65		196,354	4	4	2,039,231	63
1938[K]	8,298	7,538	2,488	78,372	32,643	2,511	57,318	[E]3,821	6,913	495		200,397	4	4	1,988,041	61
1939[K]	7,589	7,873	2,327	78,151	30,791	2,654	62,087	[E]4,000	7,097	3,934		206,503	3	4	2,085,444	61
1940[H]	7,074	7,731	2,250	66,900	24,225	2,639	62,011	[E]4,000	7,047	5,365		189,242	3	14	2,141,946	63
1941[H]	6,794	7,762	2,270	64,000	12,650	2,659	53,704	[E]4,000	6,864	5,871		166,574	3	14	2,226,836	63
Total	43,743	53,521	259,419	1,080,832	202,993	85,509	1,030,391	40,240	108,032	15,750		2,920,430	27	1,058	39,616,887	64

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] All figures for 1940 and 1941 are from U. S. Bureau of Mines publication, "International Petroleum Trade," for March 31, 1942. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany. [K] Figures for 1937, 1938, and 1939 as published in Minerals Yearbook, Review of 1940, are here revised to show corrections indicated by Bureau of Mines in "International Petroleum Trade," for March 31, 1942, as follows: 1937, Mexico revised; 1938, Hungary and Mexico revised; and 1939, revisions made for Hungary, Roumania, Russia, Mexico, Colombia, and Venezuela.

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International Oil Fronts

[Continued from page 44]

Ecuador, likewise, produced, used, and exported less oil in 1941 than in 1940, and is not likely to show improvements this year. Crude output last year was 1,557,000 barrels and consumption totaled 348,000.

Bolivia produced and imported less in 1941 than in 1940, and curtailed use in line with those decreases in supply. Production totaled 230,000 barrels and consumption 330,000, and no betterment of those figures is indicated for 1942.

Without production of its own, Brazil cut consumption from 9,500,000 barrels in 1940 to 8,790,000 in 1941, and is finding it necessary to further curtail use this year, because of the tanker shortage, as are most of the other non-producing South American countries.

Mexico has been using only a little over one half of its petroleum production, having exported the surplus to the United States and other countries. Consequently, the tanker situation is having an adverse effect. In the first four months of 1942, Mexican production totaled 14,068,000 barrels, against 12,701,000 in the corresponding months of 1940, an increase of 10.7 percent. However, comparisons grew progressively less favorable each month, and April, 1942, showed a decrease of 6 percent from April, 1941. For the year, a possible substantial decrease in production consequently is indicated. Mexico produced 44,036,000 barrels in 1940 and used 23,289,000 barrels, while exporting 20,550,000 barrels of crude and products. Those exports included 15,700,000 barrels shipped to the United States (11,500,000 of crude and 4,150,000 of refined products), 2,950,000 barrels to Italy (2250 crude and 700,000 refined), and 760,000 barrels of crude to Japan. In 1941, production was down only slightly to 43,837,000 barrels, as domestic consumption increased a little to 23,680,000 barrels, while the United States apparently stepped up purchases.

While all the above significant wartime developments and prospects indicate far-reaching changes in world petroleum outside the United States, similarly important changes and adjustments have been forced in the United States segment of the industry. Whereas it is normal for American petroleum consumption and production to grow steadily in line with increasing population and improving standards of living, this year may be expected to bring decreases of possibly around 2 percent in demand and output. For the gains of the early part of the year likely will be more than canceled by the shortage of tankers and the lack of new automobiles and tires.

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LAMTEX Casing Pumps

War Is Deterrent

[Continued from page 51]

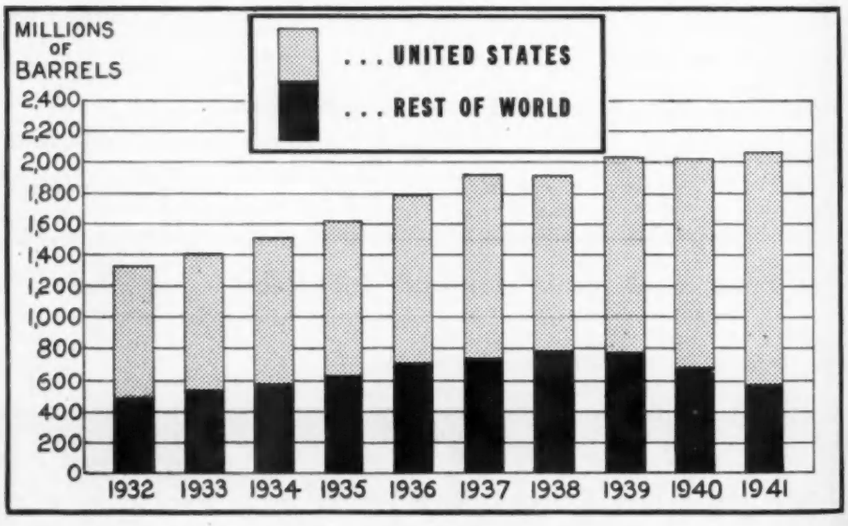
parently will not only continue to decline but go down more sharply than it did in 1941.

Consumption within the United States, that is, domestic use, is no longer revealed exactly, but information and statistics are available to show fairly well the total demand, which includes exports combined with domestic demand. For 1942 as a whole, it is indicated total demand may be around 1,567,000,000 barrels, which would be 25,000,000 barrels, or 1.5 percent, short of the 1941 total demand, which amounted to approximately 1,592,000,000 barrels, on the basis of official figures for the first 9 months and estimates for the last 3 months. The 1941 total apparently included about 100,000,000 barrels of exports of crude oil and refined products, but what part of the indicated total demand of 1942 will constitute exports may be only guessed at.

The comparatively good showing of United States demand in prospect for this year is possible because the first quarter showed an increase of over 11 percent or more than 40,000,000 barrels over the corresponding period last year, an increase from 366,000,000 to more than 406,000,000 barrels. For the second quarter there was, in contrast, a decrease of 1 to 2 percent, or several millions of barrels from the 387,464,000 barrels reported for the April-June quarter of 1941. For the first 6 months of 1942 there was, therefore, a net increase of about 35,000,000 barrels or 4.6 percent in the total demand. For the third quarter of 1942, the Bureau of Mines has forecast a decrease of about 7 percent, which would be 28,000,000 barrels less than the 407,000,000 barrels in the like period last year. On that basis, total demand for the first 9 months of 1942 would be about 6,000,000 barrels or 0.5 percent above the 1,160,590,000 barrels reported for the corresponding months of 1941. For the fourth quarter of 1941, total demand is here estimated at about 431,000,000 barrels, in absence of official statistics; and if the expected 7 percent decrease of the third quarter of this year should extend through the fourth quarter, there would be a demand of over 400,000,000 barrels during the period, a decrease of 30,000,000 barrels. The new pipe line to the East Coast is expected to bring its favorable effect on consumption in the final quarter, but that period will compare with one in which United States consumption was at an all-time peak.

The above comparisons of United States total demand for all oils in 1941 and 1942 roughly indicate the differences in domestic consumption for this year as compared with last year, inasmuch as domestic use is the predominantly important component of total demand. However, instead of the 25,000,000-barrel decrease calculated above for total demand in 1942, domestic demand will show a decrease greater than that amount by the extent of any gain in exports for the year; or on the other hand, the domestic demand will do better than decline 25,000,000 barrels in so far as there is any decrease for the year in exports.

Outside the United States, drastic reductions in civilian consumption are in-



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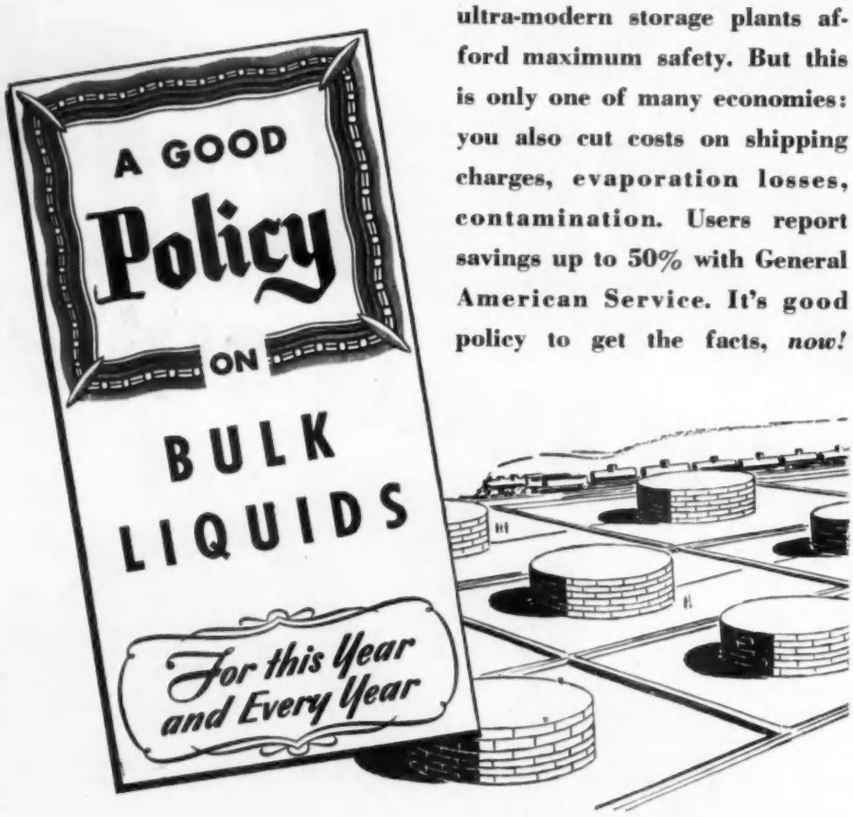

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dicated for this year in various countries, while any increases will be exceptions to the rule; and the decreases very likely will substantially pull down total oil use, despite further expansion of military consumption.

Russia may be expected to effect further large curtailment of civilian use, despite the fact that Russian agriculture is highly mechanized, although the oil so saved may have to go largely into military operations. Russia faces the continued threat of the loss of the oil fields of the Caucasus, which constitute the country's principal source of supply. Germany, Italy, and the United Kingdom probably will try to make additional savings of several millions of barrels each in civilian consumption, although military needs may more than cancel the savings. Other European countries in the aggregate likely will show in the meantime considerable further curtailment of their use.

Pinch of Tanker Shortage

In the Western Hemisphere, other countries as well as the United States are pinched by the shortage of tankers and the lack of new automobiles, trucks, and tires, and most of them will be obliged to use less oil than formerly. Canada is stringently restricting consumption and will use some millions of barrels less than heretofore for civilian purposes, while Argentina and Brazil may be expected to consume several millions of barrels less.

In the Far East, radical elimination of civilian consumption has attended Japanese conquests. Japan's own civilian use probably has been desperately curtailed from the indicated 26,000,000 barrels of 1941 to the lowest level possible, which would be to the basis of only about 5,000,000 barrels for 1942, if it has been correctly estimated that 20 percent of peacetime needs is the minimum level to which civilian use can be cut in time of war. In consequence of war in the Pacific destruction of oil wells and refineries in the Netherlands East Indies, and capture of some wells for Japan's military use, the civilian consumption of petroleum for 1942 will be only a fraction of 1941 use in the East Indies; and British India and Australia may be expected to show large decreases, although the United States has replaced the East Indies as a source of oil for Australia, to supply military and essential civilian requirements. Against the sharp reductions in civilian consumption in the Far East, however, must be weighed the extraordinary consumption during the year in the military operations, even though that military use evidently has involved heavy withdrawals from storage by Japan.

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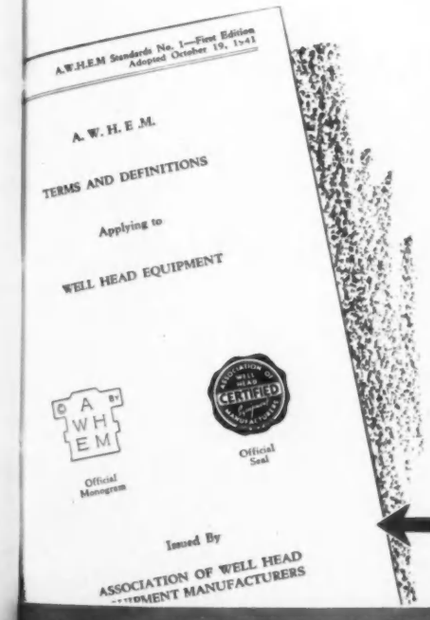

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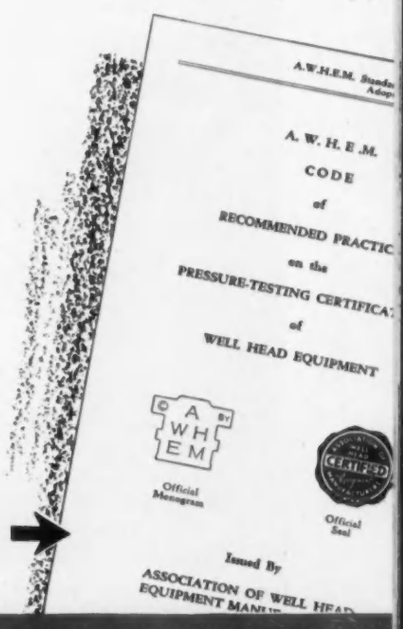


ASSOCIATION OF WELL HEAD EQUIPMENT MANUFACTURERS

PRACTICAL OPERATING *Hints* FOR

1. HOUSING

Standard Panels and Strapping Form Units

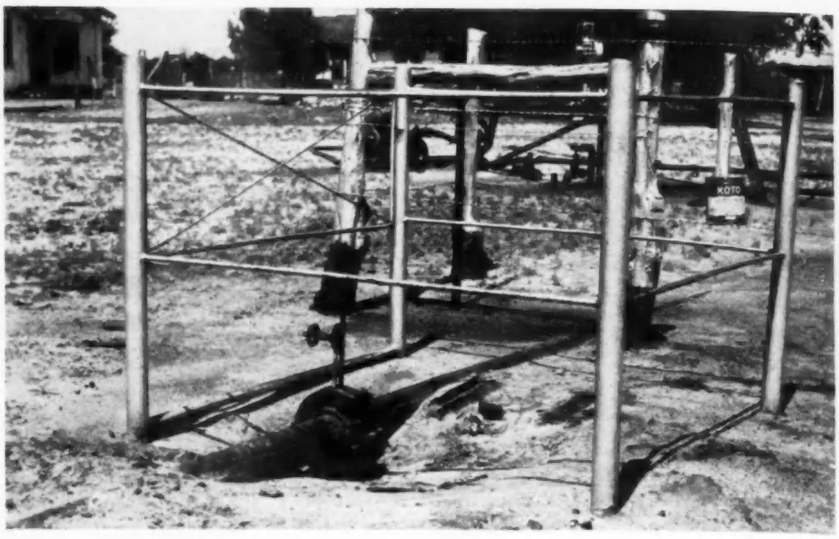
WALLS of the portable shelters used by one company are built in standard 8-foot sections, the requisite number being assembled to give the desired length to the house.

To speed erection of these units, posts of 2-inch pipe are driven into the ground on 8-foot centers, and the panels fastened to them. Instead of using bolts, with the consequent difficulty of aligning holes in post and panel, steel strappings such as is used to reinforce heavy crates is employed.

The strapping is passed around the 2 x 4 upright at the end of the panel, one loop being about 8 inches off ground, the other a like distance from the top. The straps are wrapped once around the post, and then clinched, forming a quick, secure method of holding the panel to the post, and yet one which may quickly be released, simply by spreading the binding clip to permit release, or cutting the strap with a hatchet or cold chisel.

Driven posts carry roof and anchor side members to give winter and summer closures with little change.

In summer, if greater ventilation is desired, one or more panels may be removed from a side of the building without impairing the protection or weakening the strength of the others—and it may be quickly replaced if required.



To protect the meter from possible damage through careless driving on the lease, light fence affords visible protection and wards off grazing cattle without impeding servicing.

2. METERS

Self-Contained Fence Protects Meter Set-up

THE gas meter on one lease in the Benavides field of Duval County, Texas, is protected by a steel fence around the setting. Flare line from separator is equipped with connections for attaching the meter, having fittings for an orifice plate, and with permanent attachments for connecting the meter on both upstream and downstream sides. The meter is set only when gas volume tests are made.

The section of flare line used for the metering apparatus is enclosed by a steel fence. Corner posts are of 2-inch pipe and standing about four feet high. The area enclosed by posts forms a 6-foot square.

On three sides two parallel rows of light sucker rods cut to proper length are welded to the posts to form a barrier. The fourth side is equipped with a swinging gate, of light sucker rod frame, with cross members of welding rod. One end is suspended in sockets made of 1-inch pipe cut into short lengths, into which arms in proper position on end of gate are inserted. A latch on the free end fastens when gate is closed.

3. REGULATION

Gas-fired Heater Halts Regulator Freezing

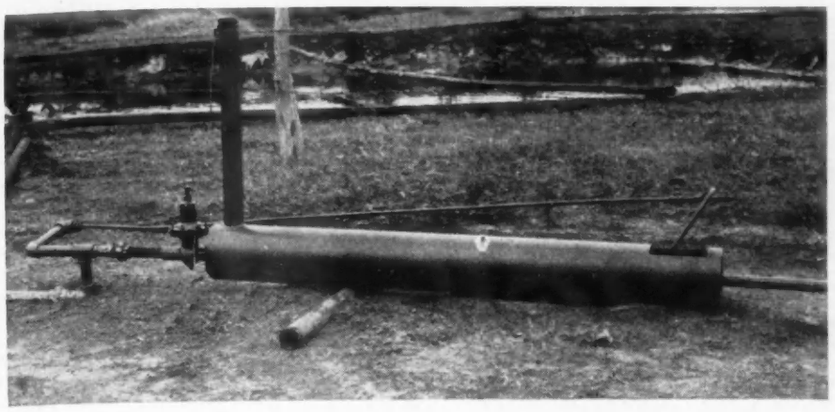
ONE operator prevents freezing of valves and orifices on gas line line regulator by utilizing gas from the line to feed pilot flame on heater. Gas is obtained from the line on he downstream side of the regulator, and is delivered to pilot at the desired pressure after being reduced.

The heater body is made of 5-inch pipe 6 feet long, with both ends sealed by welded circular plates. Holes are

THE practical operating hints for the drilling rig, production man and pipeliner, appearing regularly in these pages, are secured from oil operations everywhere and offer suggestions that will help to improve operating efficiency and safety.

The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, The Oil Weekly, Houston."

THE PRODUCTION MAN



Gas flow through regulating valve is heated by small amount bled off and burned in muffle-type furnace enclosing the line to maintain temperatures above hydrate-forming point.

drilled in the plates to allow passage of 1½-inch gas line. On lower end of heater body, a window is cut into one wall on the top side of the container pipe, 6 inches long by 4 inches wide. At the opposite end, a hole is cut in top of heater for erecting a short stack made of a 3-foot joint of 2-inch pipe welded over the hole in vertical position.

The regulator is mounted on the gas line a short distance from the heater, and immediately a tee is connected with the line which continues to its ultimate destination. Through the remaining outlet of tee, another branch of line leaves for the pilot flame. By means of a bushing, the pilot line is reduced to a ⅜-inch pipe which is inserted into the window cut in top of heater.

In this way, gas is diverted from the main line after reduction of pressure, and, when pilot is lighted, flame contacts outside of gas pipe, heating gas before it reaches the regulator to sufficiently high temperature to prevent freezing.

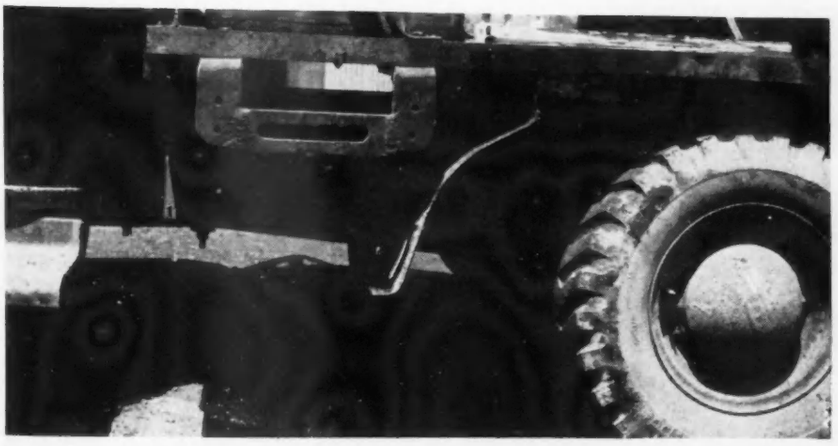
4. *MEASURING*

Bracket on Truck for Mounting Wire Reel

SLOTTED to take the mounting stud of the measuring line unit, and bolted at the side of the truck body in line with a rear wheel, a simple bracket permits power operation instead of laborious hand winding of the line.

The unit is clamped to the bracket, the hub cap on the rear wheel removed, a light V-belt pulley slipped into its place and secured by two of the bolts used to hold the wheel in place, and the belt then put in place.

It is necessary only to jack up the rear wheel, put the transmission into the desired speed, and apply engine power for reeling in the line. The rear wheel brake may also be used when lowering an instrument into a well, by throwing the gear lever into neutral and checking wheel speed with the brake.



Bolted to side of truck body, this bracket mounts measuring line reel, while V-belt pulley on jacked-up rear wheel drives unit. Close control is obtained through gear box.

$63.00

Type 3000 S

Type 3000 S (Low pressure gas)—Single injector unit with 5 gallon container and sight feed only, on unitized steel base. No fittings. For operation on low uniform gas pressure (below 100 lbs.) such as separators and vent lines. Injecting pressure to 5000 lbs. F. O. B. Houston, $63.00.

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Synthetic Rubber Becomes Washington Free-for-All

DIFFERENCE of opinion as to the rubber situation of the country became a free-for-all fight last week as Congress, the Rubber Manufacturers' Association, the War Production Board and the Office of Price Administration severally and individually broadcast their views on the most confused subject before the American public.

As WPB and OPA officials stubbornly clung to their contentions that the nation was in the throes of a rubber famine which will not be eased for at least 30 months, the Senate began debate on the Gillette bill to establish an independent rubber agency and the rubber association, staging an exhibition of rubber products at a Washington hotel, announced a two-year plan which it said would provide all essential tires.

In the face of Administration opposition and a sharp warning by Majority Floor Leader Barkley that enactment of the legislation would be a mistake, the Senate on July 22 passed the Gillette bill setting up a separate rubber agency to organize the production of synthetic from agricultural products.

Rejecting all efforts to amend the bill to keep control of priorities in the hands of the War Production Board, the House passed the measure July 24 by a vote of 104 to 18 and sent it to the White House, where President Roosevelt earlier in the day had told a press conference he did not know what action he would take with respect to the legislation.

Strongly opposed by WPB Chairman

Synthetic Rubber Plants Under Contract

Plants to Manufacture Synthetic Rubber Ingredients

NAME	Production Capacity in Short Tons per Year		Completion Date
Butadiene Plants:			
Shell Chemical Company	30,000		March, 1943
Southern California Gas Co.	25,000		January, 1943
Humble Oil & Refining Co.	30,000		March, 1943
Standard Oil Co. of La.	6,200		September, 1942
	15,000		March, 1943
Carbide & Carbon Chemical Co.	5,000		September, 1942
	20,000		January, 1943
	20,000		February, 1943
	20,000		March, 1943
	20,000		April, 1943
	20,000		April, 1943
	20,000		May, 1943
	20,000		June, 1943
	20,000		May, 1943
	20,000		June, 1943
	20,000		July, 1943
Atlas Oil & Refining Corp.	12,000		November, 1942
Neches Butane Products Co.	50,000		April, 1943
	50,000		June, 1943
Rubber Synthetics, Inc.	50,000		June, 1943
	50,000		August, 1943
Koppers United Co.	20,000		August, 1943
Sinclair Rubber, Inc.	50,000		October, 1943
Cities Service Refining Co.	55,000		August, 1943
Total Butadiene		648,200	
Styrene Plants:			
Dow Chemical Co.	25,000		March, 1943
Monsanto Chemical Co.	10,000		October, 1942
	10,000		January, 1943
	5,000		February, 1943
	5,000		March, 1943
Carbide & Carbon Chemical Co.	12,500		January, 1943
	12,500		April, 1943
Dow Chemical Co.	4,200		January, 1943
	25,000		April, 1943
	25,000		June, 1943
	12,500		August, 1943
Koppers United Co.	35,000		August, 1943
Total Styrene		181,700	
Total Ingredients		829,900	

Plants to Manufacture Finished Synthetic Rubber

NAME	Production Capacity in Long Tons per Year		Completion Date
Copolymer Synthetic Rubber Plants:			
Firestone Tire & Rubber Co.	30,000		February, 1943
	15,000		June, 1942
	15,000		September, 1942
	15,000		June, 1943
	15,000		July, 1943
	15,000		August, 1943
Goodyear Tire & Rubber Co.	15,000		August, 1943
	15,000		May, 1942
	15,000		August, 1942
	30,000		June, 1943
	30,000		April, 1943
	15,000		May, 1943
	10,000		June, 1943
	55,000		October, 1943
The B. F. Goodrich Co.	30,000		November, 1942
	30,000		January, 1943
	30,000		April, 1943
	15,000		May, 1943
	10,000		June, 1943
U. S. Rubber Co.	30,000		January, 1943
	30,000		March, 1943
	30,000		May, 1943
	15,000		August, 1942
	15,000		November, 1942
	15,000		June, 1943
	15,000		July, 1943
	15,000		August, 1943
To be determined	30,000		June, 1943
	30,000		June, 1943
	15,000		August, 1943
Total Copolymer Rubber		645,000	
Butyl Synthetic Rubber Plants:			
Standard Oil Co. of La.	7,000		November, 1942
	33,000		July, 1943
Humble Oil & Refining Co.	20,000		July, 1943
Total Butyl Rubber		60,000	
Neoprene Synthetic Rubber Plants:			
E. I. Dupont De Nemours & Co.	10,000		October, 1942
	10,000		April, 1943
	20,000		October, 1943
Total Neoprene Rubber		40,000	
Total Synthetic Rubber		745,000	

Donald M. Nelson and Administration leaders because it would deprive WPB of full authority over priorities, the bill would set up a "Rubber Supply Agency" under a director whose duty it would be to provide and make available at the earliest possible time an adequate supply of rubber from alcohol without interfering in the present program for rubber from oil. The director would be empowered to enter into contracts for the construction of plants, in connection of which he may certify to WPB any need for materials under control and WPB will be required to provide that delivery of such material shall have priority over all deliveries for private account.

Senate acceptance of the bill was on a voice vote, without a single "nay."

Rubber association officials said approximately 48,000,000 new and retreaded tires will be needed to keep 29,000,000 civilian automobiles running for essential purposes for the next two years, and contended that they can be supplied by the judicious use of only a small amount of rubber to be taken from the government's holdings.

They proposed the release of 4,660,000 tires from stocks now in the hands of manufacturers and dealers; the manufacture of 13,223,000 new tires from reclaimed rubber and from Thiokol and butyl, synthetics produced by Dow Chemical Company and Standard Oil Company (New Jersey) which are not included in the government's rubber program although materials and apparatus for making considerable quantities of both are on hand; and the retreading of 30,291,000 tires now in use, using rubber reclaimed from tires turned in after they can no longer be retreaded, strengthened by a small amount of new rubber, asserting that by this program 17,814,000 new and retreaded tires could be made available the first year and 30,360,000 the second year.

The association program calls for the use of 97,420 tons of reclaimed rubber, 33,188 tons of Thiokol, 32,475 tons of butyl and only 3,332 tons of new natural rubber.

There are sufficient tubes on hand—approximately 10,000,000—to meet all requirements, with proper repair of those now in use, it was said.

The rubber industry, engaged in the greatest fight of its career in an effort to keep automobiles on the road so that, if rubber production permits of civilian consumption, a market will be kept available, contends that this plan will leave for military and civilian requirements, other than tires, nearly all of the natural crude supplies, over 85 percent of all reclaimed rubber, and all of the synthetic rubber contemplated in the government program, with possibly some Thiokol and butyl as production of those types increases.

It was admitted that strict rationing of tires and enforcement of careful driving would still be vital, but it was asserted that under the association program no car would have to be laid up for lack of rubber.

Members of the group pointed out that WPB Chairman Donald M. Nelson had admitted that if the rubber program was drafted over again he would assign 60 percent to grain alcohol, and asserted that his admission counteracted his opposition to any move which would take control of the rubber situation out of his hands.

Intimating that the time has come for a show-down on rubber, Senator Gillette of Iowa, author of the legislation, declared in a discussion of the situation that the handling of the synthetic program has been inept and fumbling.

"The record of the last few months is not one to which anyone can point with pride," the Senator said. "Whether the failure is the result of incompetence of one or more individuals; whether it is the result of wrong advice given by those in subordinate positions to those policy-making individuals, or whether it is properly charged to any man or to any group of men from ulterior, questionable or sordid motives which might have influenced their advice or decisions, yet the fact remains * * * that the time for quibbling and indecision has passed."

The only thing standing in the way of using grain, he asserted, is the lack of materials for the erection of plants because of the commitments made to the oil companies, this, he contended, despite the fact that grain plants could be built and placed in operation within six to eight months while not less than 18 months is required for completion of oil plants.

Reportedly promising that the Reconstruction Finance Corporation will sign contracts with refiners for "quickie" butadiene when the present OPC survey is completed and asserting that the Rubber Reserve Company is cooperating with Ickes in determining where, when and how much material is needed to produce Flexon, one of the new synthetics, Stanley Crossland, vice president of Rubber Reserve Company, has filed with the Senate Agricultural subcommittee investigating the synthetic situation a list of the plants now under contract, together with the capacity of each plant and scheduled dates of completion, as shown in an accompanying table.

Butylene Glycol

A possible speed-up in the process of producing butadiene from farm crops such as corn and wheat is foreseen by officials of the Department of Agriculture in a new short and economical process for making butylene glycol developed at the department's research laboratory at Peoria, Illinois.

Butylene glycol is being studied as a possible link in the production of butadiene, in a three-step rubber process by which butylene glycol is made from the raw material and converted into butadiene for use in the manufacture of rubber.

Chemists at the Peoria laboratory, it was said, have succeeded in producing excellent yields of pure butadiene from corn-made butylene glycol in the laboratory, but have not as yet developed the process to a pilot-plant scale and are not making any definite predictions until that has been done.

Butyl Process Speeded And Costs Lowered

Improvements have been made in the manufacturing process for butyl rubber with the result that it is possible to lower butyl rubber costs and materially increase capacity of butyl rubber plants under construction without delaying their completion, W. S. Farish, president of Standard Oil Company (New Jersey) disclosed last week. The five butyl plants being built by Standard Oil Company of Louisiana and Humble Oil & Refining Company for the government had an originally designed capacity of 60,000 tons yearly. The improvements make it possible to raise the capacity to 192,000 tons yearly at an estimated additional investment of 27 percent.

The revised manufacturing process has been called to the attention of the government, which advised the companies to work out a practicable balance between higher capacity and increased investment to the end of providing maximum possible increase in capacity of the plants without increasing the investment at all. The new program as approved in principle by War Production Board last week, said Farish, calls for cancellation of one of the five plants and the use of materials thus saved to increase the capacity of the four remaining plants to 132,000 tons of butyl rubber yearly. At the same time the isobutylene preparation capacity is raised from 60,000 tons to 90,000 tons per year at no net increase in cost or materials.

The butyl rubber process improvements, consisting basically in changes which reduce the amount of recompression and chilling of untreated isobutylene, are expected to lower plant investment per ton of yearly capacity from $750 to about $350 and make an approximate reduction of 5 cents per pound in cost of making butyl.

[*Continued from page 39*]

new rationing system developed by the Office of Price Administration.

As the new system came into operation, motorists were skeptical of how long their pretty new coupons would call for the four gallons set as their value by the OPA and station operators gloomily predicted the worst price wars the industry ever has known, with thousands of small pumpers as casualties.

July 21 was literally an "oil day" in the national capital, as groups of gasoline retailers frantically urged OPA officials to set a "floor" under prices to avert price wars and hundreds of traveling salesmen protested hotly that the new system, excluding them from the category of essential occupations entitled to "C" books, would drive them out of business.

As the system went into effect, no car owner in the rationed area knew whether he would get additional rations over the basic A book providing for approximately 2800 miles of driving a year, since none of the rationing boards had begun to act on any applications filed for supplemental "B" and "C" books.

Initially, the OPA ruled, A, B and C coupons would be valid for four gallons of gasoline, as previously announced, and S coupons would be good for five gallons. The first three books are for passenger cars, the S books for trucks. But there was no indication how long these values would be maintained, and there was general belief among motorists that when cold weather increased the fuel-oil demand their coupons would be reduced to two gallons—a sentiment that presaged that many would "cash" their coupons as rapidly as possible so as to get gasoline "while the going is good," with consequent drain upon stocks and the upsetting of calculations of average consumption.

Plans to set up a 50-mile buffer zone outside the western boundary of the rationed area, within which stations could not sell gasoline to cars bearing ration stickers, were abandoned by OPA in favor of a 25-percent cut in deliveries to the counties in western New York, Pennsylvania, Maryland, Virginia and West Virginia which were exempted from rationing, and to 76 counties in in eastern Tennessee and Alabama and western Florida. Another seven counties in western New York were subjected to an immediate curtailment of one third and will be brought back into the rationed area August 22.

Officials in Washington said that the 25-percent cut in deliveries in the buffer area will not seriously affect station operators, since a curtailment of almost 20 percent already has been effected through voluntary reductions in driving and through the tire and automobile rationing programs. However, it was said, the cut is expected to keep supplies down to a point where stations will be able to supply local customers but will not have any surplus for "tourists" from the east.

Throughout the rationed area, suppliers' trucks worked overtime as the new system went into effect, to fill station tanks. All station storage was filled as a send-off for the coupon system, but stocks are to be replenished only to the extent of coupons taken from motorists by the stations. This method will supplant the former rule of curtailment of deliveries by 50 percent, and is expected to eliminate the closing of stations because quotas were exhausted which made it almost impossible to get any gasoline over the weekend in many sections. Stations, however, will continue to operate on the 72-hour week.

The elimination of the quota system was seen by small operators as an invitation to price wars. They pointed out that stations with filled storage would have to compete for half the business they did before rationing, and expressed the fear that some of the better financed operators would cut prices as a means of getting rid of undesired competition. OPA officials, however, said the price control act permits the placing of ceilings over prices but contains no authority for building floors under them.

A strongly worded warning to dealers against violation of the rationing provisions was sounded by Price Administrator Henderson when the new system went into effect. Willful violators will be put out of business, he said, and station operators who are "careless" in collecting ration coupons may find themselves cut off from supplies, since deliveries will be made only on the basis of coupons turned in.

Under the original rationing system, a large number of violations were discovered and, as a penalty, supplies were denied guilty stations for varying periods.

"The petroleum situation in the East is so desperate that any attempt to violate the rationing system will constitute an assault on a vital war measure and will be dealt with accordingly," Henderson warned.

"Because of sinkings and diversion of tankers that in the past carried 95 percent of our petroleum products, East Coast stocks of petroleum have been reduced to unprecedented lows during the time of year when they should be built up for the fall and winter heating and fuel oil peak of demand," he said. "I want to emphasize that every gallon of gasoline used for other than essential war transportation on the East Coast means a gallon less fuel oil for keeping people warm next winter and for keeping war plants going."

As the new system got under way in the East, Henderson announced that Puerto Rico will be brought under rationing August 1 because of the "extremely critical" situation. The same system will be followed, but the gasoline value of A book coupons has been fixed to give motorists an average of only eight gallons a month, or half what the Eastern car owners are to get.

☆

TAX COLLECTIONS: Transportation dislocations in the East and conservation of rubber nationally have curtailed gasoline consumption to a point where it affects not only industry, but also the federal treasury.

Reversing an upward trend maintained over a long period of years, gasoline consumption has been on the downgrade ever since the sale of tires was halted last year.

This movement now has caught up with the tax collector, the Internal Revenue Bureau reporting that for the first six months of this year receipts from the federal gasoline tax, amounting to $167,578,449, were $1,188,640 under the $168,767,089 collected in the same period in 1941.

Collections for the fiscal year ended June 30, last, however, were $26,566,000 above the preceding year, totaling $369,587,151 against $343,021,269, the bureau announced.

Fiscal-year receipts from the levy on lubricating oils showed an increase of $8.211,423, totaling $46,432,268 against $38,220,844, and for the first half of the current calendar year maintained a slight lead over 1941—$20,266,662 against $20,243,378.

The year's revenue from pipe-line transportation showed a gain of $994,237, amounting to $13,474,823 against $12,480,586, and for the six-month period was slightly ahead of last year with a total of $6,703,838 against $6,431,403, the bureau report showed.

☆

M-68: The first application for an M-68 exception covering plug back work for an entire field has been passed on to WPB by the coordinator's office and is now awaiting WPB approval.

The application covers Smackover, Arkansas, currently producing about 96 percent water, where it is planned to plug back wells to shallower horizons.

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The Week's News

OPC Recommends Increased August Output

Another increase of nearly 200,000 barrels a day is provided for in OPC recommendations for August production of petroleum liquids, announced July 22.

Coordinator Ickes set a daily total of 4,038,500 barrels as the August goal, compared with 3,842,800 barrels for the current month and an actual output in August, 1941, of 4,096,000 barrels.

Except for Districts 3 and 5, the recommendation for each state except Michigan either was reduced or left unchanged from July, the total for District 1 being reduced from 87,200 to 85,400 barrels; District 2 from 1,136,600 to 1,102,800 barrels, and District 4 from 127,600 to 124,900 barrels, while District 3 is increased from 1,751,900 to 1,958,200 barrels and California is increased from 739,500 to 767,200 barrels, the fifth consecutive month in which it has been necessary to increase output to meet the fuel-oil requirements of military and essential industries in the Pacific area.

Improvement in overland transportation from District 3 was cited as the basis for the increases given that area which, it was pointed out, partially offset a "serious" drop in production in Illinois and Oklahoma due to declining productive capacity.

A figure of 1,396,700 barrels is set for Texas for August, compared with 1,214,400 barrels for the current month and an actual of 1,473,800 barrels a year ago; Louisiana production is upped from 319,600 to 332,600 barrels, comparing with 333,000 barrels last August, while New Mexico's output is raised from 89,500 to 97,300 barrels, compared with 112,200 barrels a year ago. A 3100 barrels increase, from 78,500 to 81,600 barrels, for Arkansas puts that state ahead of its August, 1941, rate of 76,900 barrels; and Mississippi was increased from 49,900 to 50,000 barrels, compared with 51,500 barrels a year ago.

In District 1, New York's allotment was left unchanged at 15,300 barrels, and West Virginia is dropped from 17,800 to 17,300.

In District 2, Kentucky at 14,100 barrels, and Nebraska at 4100 are left unchanged; Michigan is increased from 64,800 to 66,800 barels but all other states were cut: Illinois from 304,100 to 289,300, Inidana from 22,000 to 20,600, Kansas from 283,200 to 281,900, Ohio from 11,300 to 10,500, and Oklahoma from 433,000 to 415,500.

The cut was general throughout District 4—Colorado being reduced from 7700 to 7200, Montana from 23,100 to 22,700, and Wyoming from 96,800 to 95,000.

California Unable to Meet Quota With Heavy Oil

Unless present proration restrictions on light oil fields in California are relaxed, it is not likely the state will be able to maintain during August the production rate called for by OPC in allocations for that month. Assigned a quota of 767,200 barrels daily, from which 41,000 barrels daily will be allocated to natural gasoline, condensate and other liquefied petroleum gases, will leave a crude oil quota for the state of 726,200 barrels daily, an increase of 26,800 barrels over the July quota of 699,400 barrels daily.

In the first 18 days of July the state's crude oil production averaged 692,120 barrels daily and during this period peak output was 716,000 barrels on July 17. In maintaining the 692,120-barrels-daily rate, California's heavy oil fields were producing at capacity. To meet the August quota, production data indicates, it will be necessary to relax restrictions on light oil fields, despite fact present marketing needs are from increased supply of heavy high-fuel-oil-content crudes.

Michigan Operators Plan Pooling of Equipment

The production advisory committee for district No. 2, OPC, met in Lansing, Michigan, July 18, to consider specific problems growing out of material shortages and to review new problems that may arise if it becomes necessary to further curtail development. Other than a brief statement by Otto Donnell of Findley, Ohio, chairman of the committee, that the "pooling of equipment on hand" was given particular study, both recommendations and specific items reviewed were not made public.

By pooling of equipment, a spokesman said, it was considered as a partial answer to the supply problem if equipment could be transferred from less strategic areas to the districts where oil and development is the most necessary to fit into the war effort.

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Better Texas Demand Revealed at Hearing

Improved Texas oil market was indicated at the hearing of the Texas Railroad Commission at Austin last week when operators asked for numerous increases.

Nominations totalled 1,472,157 barrels, an increase of 27,494 barrels. The recommendation of the Office of Petroleum Coordinator was 1,396,700 barrels. Thus there was a difference of only 80,000 barrels between the estimates of Washington and Austin on the consumer demand for Texas oil during the month of August.

The commission presented figures to show that the storage picture in Texas had improved to some extent and that the oil above ground was decreasing steadily.

Subsequently the commission issued an order providing for the production of 1,388,021 barrels daily. Material increases were granted to numerous fields, especially in District 4, and District 8. The largest increase, however, was 79,396 barrels daily which was provided for the East Texas field.

The order calls for 22 producing days. Shutdown days are August 8, 9, 15, 16, 22, 23, 29, 30 and 31.

During July the East Texas field was allowed to produce for 17 days and averaged 284,994 barrels. With 22 producing days in August the average was estimated at 364,390 barrels.

Increases for the state totaled 200,738 barrels, as compared with the allowable in effect on July 18. However, because of the large increases in West Texas and Southwest Texas, where nominations were lower than the allowable set for a great many fields, operators believe that considerable pipe line proration will result.

For instance, the Aransas Pass field was raised from 964 to 5359 barrels; Alice was raised from 520 to 1300 barrels. The Aransas nominations totaled 201 barrels and those for Alice 230 barrels. In West Texas, North Cowden was raised from 8648 to 13,124 barrels, although the nominations totaled only 5775 barrels. Goldsmith was raised from 24,824 to 27,737 barrels and the nominations totaled 19,692 barrels. These fields are representative of many that received material increases.

In announcing the order the commissioners, all three of whom signed it, pointed to the improved picture in storage and the generally firm market for Texas oil. The outlook appeared to be materially brighter for the remainder of 1942.

Set out in the table below are the comparative figures, by district, for August 1 and July 18:

Dist.	July 18	Aug. 1	Increase
1—Southwest ..	18,622	20,781	2,159
2—Southwest ..	62,131	71,975	9,844
3—Gulf Coast..	213,247	233,044	19,797
4—Southwest ..	90,696	127,228	36,532
5—East Central.	18,454	19,287	833
6—East Central.	66,181	67,423	1,242
East Texas	284,994	364,390	79,396
7B—West Cntrl.	25,660	27,666	2,006
7C—West Cntrl.	18,144	18,997	853
8—West Texas..	183,421	220,433	37,012
9—North Texas.	122,421	127,653	5,232
10—Panhandle ..	82,312	89,144	6,832
	1,187,283	1,388,021	200,738

Committee Studying War Dislocation Effects

The committee created by the Petroleum Industry War Council at its July meeting for considering the effects of the impact of the war on the industry was in session in New York the greater part of the last week and made progress on the report which will embody its findings. It was indicated that the report would be completed and considered by the council on August 11, although earlier plans had called for omission of the August meeting.

The committee is studying the dislocations, operating complications, extra costs, and other problems raised by the war, and at the same time is taking steps aimed at gaining the cooperation of government agencies in solution of the problems involved.

Different members of the 12-man committee were formed into several groups to work on the various phases of the difficulties confronting the industry.

All but three members of the committee participated in the sessions. The group is headed by John D. Gill, of Philadelphia, director of The Atlantic Refining Company, as chairman. Besides Gill, those in attendance included three of the five general chairmen of OPC districts, namely, John A. Brown, president of Socony-Vacuum Oil Company, New York; Frank Phillips, chairman of the board of Phillips Petroleum Company, Bartlesville; and William F. Humphrey, president of Tide Water Associated Oil Company, San Francisco. Also present were B. I. Graves, vice president of Tide Water Associated Oil Company, New York; B. L. Majewski, vice president of Deep Rock Oil Corporation, Chicago; Frank Buttram, president of the Independent Petroleum Association of America, Oklahoma City; A. Jacobsen, president of Amerada Petroleum Corporation, New York; and Dan Hovey, president of Gulf Coast Refiners' Association, Houston. Unable to attend were two of the OPC district chairmen, Charles F. Roeser of Roeser & Pendleton, Fort Worth, and W. H. Ferguson, executive vice president of Continental Oil Company, Denver, and also W. Alton Jones, president of Cities Service Company, New York.

More Colombians Plan Study in United States

Carrying out an established policy of training Colombian technical men in the oil industry by sending them to the United States, the Colombian government will soon send five engineers to this country. These are: Dr. Garbiel Cuervo, Ministry of Mines and Petroleum, who will attend the University of Texas; Leonidas T. Burgos, government oil inspector stationed at the De Mares Concession, who will attend the University of Oklahoma; Dr. Hernan Garces, a metallurgist; Fernando Pada Silva; and A. Sarmiento Alarcon. Destinations of the last three men have not been announced.

Previously, the government had sent 10 men to study in the United States, 9 of whom returned to Colombia to work in the Ministry of Mines and Petroleum. Among these were Felix Mendoza, engineering director of the Fiscal Division of the Ministry, who is a graduate of the University of Oklahoma, and Benjamin Alvarado, recently appointed head of the Geological Survey of the Ministry.

Plan New Organization for Colombian Exploration

Tropical Oil Company may combine with National Company of Carare (Sociedad Nacional del Carare) in the creation of a new organization to explore several prospective tracts in Colombia if a proposal recently made by Tropical is accepted. Tropical, operator of the De Mares concession fields, offered to share expenses equally with stockholders of the Carare company in exploration of several tracts. A committee for the stockholders has recommended that the company, which is in liquidation, sell its drilling equipment and other properties to a third company to be organized by Tropical, stockholders of the Carare company and other investors.

In 1939 and 1940 Sociedad Nacional del Carare drilled three wells on the 86,000-acre Carare concession in the middle Magdalena River valley, all of which were abandoned. Tropical Oil Company bore a portion of the cost. The concession was subsequently surrendered to the government.

Colombia Wants More Oil Field Equipment

A study of United States regulations governing export quotas and issuance of certificates of necessity will be made in Washington by Antonio M. Pradilla, superintendent of the Colombian Bureau of Imports, who goes to Washington on that mission. This official is understood to be seeking means of enlarging the flow of oil industry equipment into Colombia because of the importance of the industry to the national economy of that country.

Plans Drawn for East Indies Reconstruction

Plans are already being made for reconstruction of Royal Dutch Company properties destroyed in the East Indies this year. The company states in its annual report for 1941 that "Planning of the reconstruction of what has been destroyed has immediately been taken in hand. Special attention is being paid to insure that when the time for reconstruction arrives, full use will be made of the latest experience which the group has gained in the oil industry. In every sphere of the group's research and development work this task is constantly borne in mind."

The company made no estimate of the value of the destroyed East Indies properties or the recent productive capacity of the fields in Japanese hands.

Gulf Starts Exploration In Western Canada

Gulf Oil Corporation soon will begin a geophysical survey in Alberta with a ten-man crew carrying on a general survey during the summer and coming fall.

With the entry of Gulf, the four oil groups are active in the search for oil in Western Canada, including Shell Exploration (Alberta), Ltd.; Imperial Oil Company and its several subsidiaries, and McColl-Frontenac Oil Company.

Bureau Report Details Industry Operations in May

Domestic crude production moved upward in May, but runs to stills continued to decline and reached the lowest daily average in months, it is disclosed by the monthly production statement of the Bureau of Mines.

Daily average production, the bureau announced, increased from 3,501,800 barrels in April to 3,554,600 barrels for May, and total output for the same period increased from 105,053,000 to 110,192,000 barrels.

Runs to stills dropped to 3,448,000 barrels a day, but the longer month raised total runs to 106,883,000 barrels from 104,882,000 barrels in April.

The decline in crude runs, combined with increased output, the bureau pointed out, resulted in considerably less crude being withdrawn from stocks, but total withdrawals amounted to more than 3,000,000 barrels, bringing the total on hand down to 254,577,000 barrels of refinable crude on May 31.

The gain in output was chiefly enjoyed in Texas, where production increased about 116,000 barrels a day, with small gains registered in Wyoming and Arkansas, but production in most states declined, the daily average in Illinois dropping to 291,700 barrels to mark the first time the state has been below 300,000 barrels since July, 1939.

The only marked change in yields of the major products was a gain in residual, the bureau explaining that this contra-seasonal increase reflected efforts of control agencies to increase production. The gasoline yield remained unchanged at 39.9 percent, but the distillate yield declined from 13.4 percent in April to 12.6 percent in May.

"The total demand for motor fuel in May was about 55,000,000 barrels, or 10 percent below a year ago," the bureau commented in discussing the current situation. "Restrictions in deliveries to dealers in District 1, which were more stringent than in April, continued as the paramount factor. Stocks of gasoline continued to decline rapidly, amounting to 94,681,000 barrels on May 31, compared with 101,822,000 barrels the month previous and 92,931,000 barrels on hand a year ago.

"Indications are that the demand for residual was ahead of last year, but distillate and lubricating oil were probably lower. The rapid decline in wax stocks virtually ceased in May."

Natural gasoline production amounted to 6,718,000 barrels, making total domestic production 116,910,000 barrels, or an average of 3,771,000 barrels a day. The decrease in stocks, all oils, was 8,400,000 barrels.

At the close of the month stocks of refinable crude were reported as 254,577,000 barrels; heavy in California, 11,168,000 barrels; natural gasoline, 6,568,000 barrels, and refined products, 252,043,000 barrels, a total of 524,356,000 barrels against 532,556,000 barrels April 30.

The price index for petroleum and products, as compiled by the Bureau of Labor Statistics for May, was 59.1, compared with 58.4 in April and 55.3 in May, 1941. The crude-oil capacity represented in the report was 4,631,000 barrels, giving an operating ratio of 74 percent, compared with 75 percent in April and 88 percent in May, 1941.

Stocks Encouraging Except Heavy Fuel

The industry was able to continue its highly desired and seasonal reduction in gasoline stocks along with an equally wanted build-up of distillate fuel inventories during the week ended July 11, but was unable to prevent further drafts on already low level stocks of heavy fuel oil. Consequently, prospects that surplus gasoline would be a serious economic detriment were further delayed, and there was some improvement on the question whether there would be adequate heating oils for winter demand, but the outlook for a shortage of residual fuel became more serious.

Apparently refiners failed to continue the adjusted product yields that gave the preceding week such an encouraging note due to sizeable additions to both types of fuel oil stocks while gasoline inventories were cut. Crude runs to stills were at exactly the same level as the preceding week in averaging 3,582,000 barrels daily, but production of gasoline rose to 10,963,000 barrels for the 7-day period in contrast with 10,675,000 barrels the previous week.

Although 288,000 barrels more gasoline was produced during the week ended July 18, the rate of drawing upon stocks of this product rose 233,000 barrels over the previous week. A total of 1,589,000 barrels of gasoline was taken from storage, leaving stocks on July 18 at 84,069,000 barrels, 2,222,000 barrels, or 2.6 percent, under the level of a year ago.

Distillate-fuel-oil stocks rose 758,000 barrels, indicating that July is to see the greatest increase attained so far this year. After three months of fairly steady gains, inventories of distillate fuel oil now total 35,176,000 barrels, but this is still 5,548,000 barrels or 13.6 percent under a year ago level; and consequently the heating oil prospective supply question has not yet been cured despite the recent improvement.

Heavy fuel-oil stocks declined 661,000 barrels to 77,230,000 barrels, which represents a reduction of 18,627,000 barrels since the first of the year. In comparison with a year ago heavy-fuel stocks are 13,829,000 barrels smaller, or down by 15.1 percent. The only encouragement in the residual fuel situation is that the 988,000-barrel addition during the week ended July 11 was sufficient to indicate that the reduction in July will be less than in preceding months. Reductions last week continued to occur primarily in California, where 622,000 barrels were withdrawn to drop stocks of fuel oil to 54,196,000 barrels. A 129,000-barrel drop also occurred in the combined East Coast-Texas-Louisiana-Arkansas area, with smaller gains in other regions.

Meanwhile one of the heaviest drafts of the year on crude-oil stocks occurred, when 1,969,000 barrels were withdrawn from storage during the week ended July 18. However, these stocks are still ample, totaling 251,311,000 barrels, only 4,256,000 barrels or 1.7 percent under a year ago.

Petroleum Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	[1]OPC Allocation in July	PRODUCTION IN WEEK ENDED July 18	July 25
Arkansas	78,500	71,000	72,200
California	739,500	700,200	701,200
Long Beach		36,300	36,300
Midway-Sunset		58,700	59,000
Kettleman Hills		44,200	38,600
Wilmington		94,700	99,500
Rest of State		466,300	467,800
Colorado	7,700	6,400	6,150
Illinois	304,100	275,200	272,150
Salem		38,850	36,900
Louden		49,350	48,000
Other New Pools		174,100	174,850
Old Pools		12,900	12,400
Indiana	22,000	19,000	19,100
Kansas	283,200	286,050	283,700
Kentucky	14,100	12,150	12,500
Louisiana	319,600	316,950	324,400
North Louisiana		93,400	94,200
South Louisiana		223,550	230,200
Michigan	64,800	67,800	61,650
Mississippi	49,900	81,400	77,650
Missouri		130	130
Montana	23,100	22,700	20,950
Nebraska	4,100	3,900	3,600
New Mexico	80,500	76,550	72,150
New York	15,300	13,100	13,400
Ohio	11,300	9,550	9,850
Oklahoma	433,900	374,650	380,900
Oklahoma City		70,700	73,450
Seminole Area		92,350	94,300
Rest of State		211,600	213,150
Pennsylvania	54,100	51,600	52,450
Tennessee		30	30
Texas	[2]1,214,400	1,233,550	1,226,200
Upper Gulf Coast		253,300	254,150
East Texas Field		298,000	293,250
Rest of Eastern Texas		87,650	87,300
Lower Gulf Coast		89,450	89,450
Southwest Texas		50,050	50,050
South Central Texas		15,700	16,000
West Texas		212,150	211,450
North Texas		142,600	139,400
Panhandle		84,650	85,150
Utah		15	15
West Virginia	17,800	9,100	10,400
Wyoming	96,800	93,450	93,900
Total United States	3,833,800	3,724,475	3,714,675

[1] Production rates recommended for states by Office of Petroleum Coordinator, on basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month. State conservation authorities except Texas Railroad Commission have prescribed allowables calculated to hold actual production within OPC regulations. (Details on state allowables published in The Oil Weekly of July 6, page 43.)

[2] Actual production of crude oil and other petroleum liquids in Texas expected to average 1,209,482 barrels daily, under railroad commission order, taking into consideration shutdowns in most of July 4, 5, 11, 12, 18, 19, 25, 26, 29, 30 and 31. East Texas fields will be shut down on these days and also on July 6, 13 and 20.

Kerr Purchases Oil Interests of Kerlyn

Robert S. Kerr of Oklahoma City last week announced he and his associates have purchased for an unannounced sum the interests of R. H. Lynn in Kerr-Lynn & Company, and Kerlyn Oil Company, which operates in Texas, Oklahoma, and Kansas.

Kerr, Democratic nominee for governor, was senior partner of Kerr-Lynn and president of Kerlyn. A portion of the assets of Kerr-Lynn is the controlling interest of Kerlyn. Kerr announced that Dean McGee had been elected executive vice president to succeed Lynn.

Venezuelan Test Quits

Mercedes Petroleum Company is suspending Mercedes 3 at 5706 feet in Guarico state after encountering water. The well is a mile east of No. 2, completed as a producer last spring. Mercedes 4, a mile west of No. 2, is drilling below 1700 feet.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Week Ended	Runs to Stills Bbls. Day (Add 000)	Week Ended	Crude Stocks Bbls. (Add 000)	Week Ended	Gasoline Stocks Bbls. (Add 000)	Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,357	1- 3	95,857	1- 3
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-21	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	80,870	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	244,364	1-10	84,069	7-18	29,240	4-25	76,903	7- 4
Trends in 1942 Week Ended):												
Jan. 3	4,038		3,961		244,440		92,987		49,357		95,857	
Jan. 31	3,871		3,848		250,740		97,810		40,674		91,189	
Feb. 28	4,016		3,675		259,373		105,635		34,547		88,285	
Mar. 28	3,820		3,667		263,208		105,624		31,756		83,045	
April 25	3,581		3,506		257,073		102,897		29,240		81,107	
May 30	3,877		3,522		255,023		95,355		31,384		79,628	
June 27	3,719		3,581		253,364		88,396		32,851		77,304	
July 4	3,297		3,551		253,280		87,014		33,520		76,903	
July 11	3,657		3,582		251,311		85,658		34,418		77,891	
July 18, 1942	**3,713**		**3,582**				**84,069**		**35,176**		**77,230**	
July 19, 1941	3,676		3,819		[4]255,567		86,291		40,724		91,059	
Change:												
In week	+56		-		—1,969		—1,589		+758		—661	
In year	+37		—237		—4,256		—2,222		—5,548		—13,829	
In year	+1.0%		—6.2%		—1.7%		—2.6%		—13.6%		—15.1%	

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, July 12, 1941.

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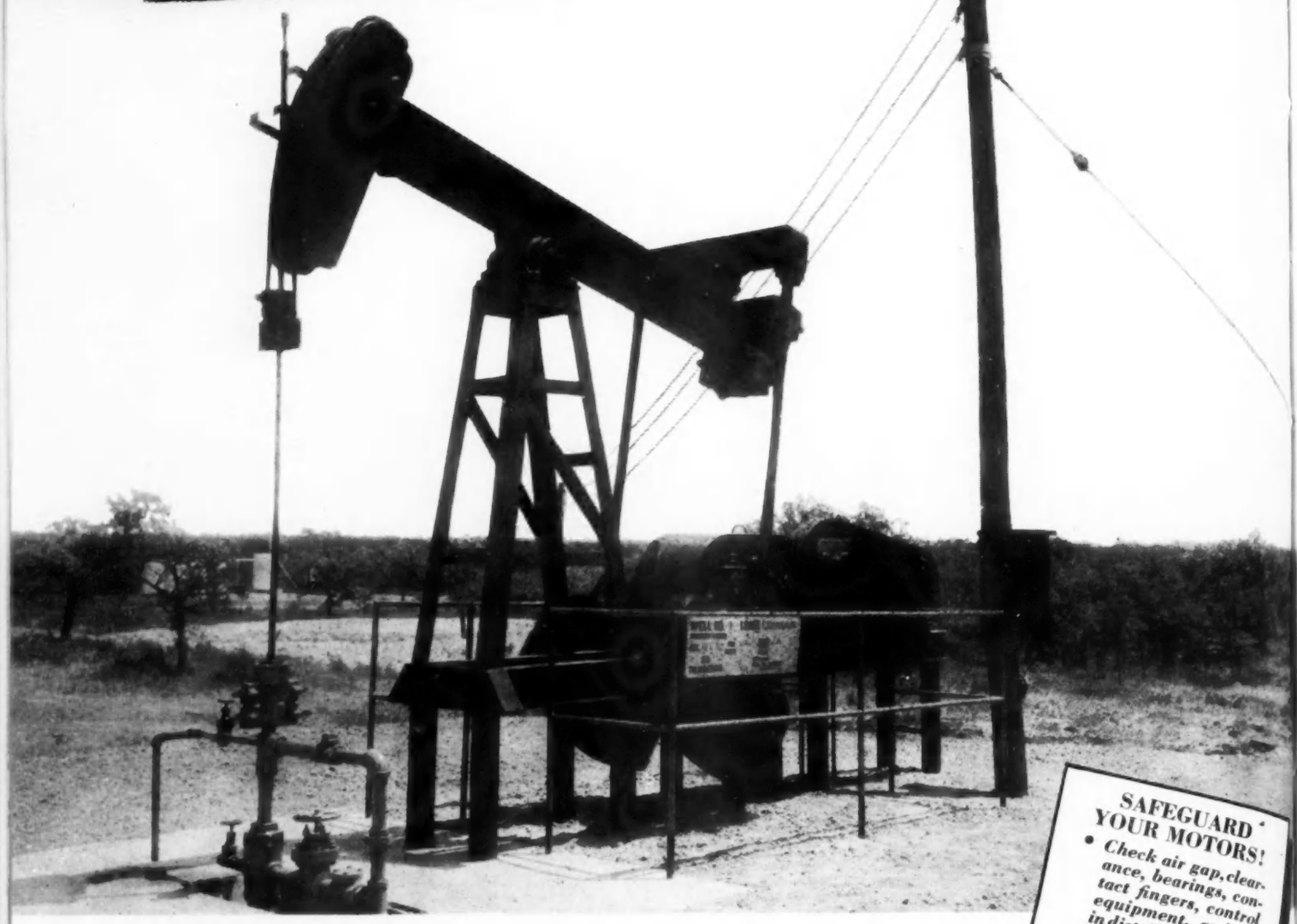

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U. S. Field Operations

Illinois Basin

Clay County Well Flows; Awaiting Storage Tanks

Bonnie Heath's Edwards 1, NE NE 217s-8e, Gallatin County, set pipe for production test on Aux Vases sand at 2449-69 ft, which on drill-stem test showed 1300 ft of oil in 30 minutes. If a producer, it will open a new pool one mile southwest of the Roland pool.

Clay County: N. V. and Walter Duncan's Jess Patridge 1, C SE SE 2-3n-7e, shut in for lack of storage after drilling plug on McClosky at 2947-55 ft. Well is flowing natural, without acid. It is in the East Flora pool area.

Wayne County: Shell Oil Co.'s Rutger 1, CE½ NE NE 17-1n-7e, wildcat near Cisne, cored McClosky at 3170-72 ft, with a slight, non-commercial showing of oil, and was drilling for the St. Louis lime.

Jefferson County: Lewis Production Co.'s Game Farm 2, SW NE 28-3s-3e, second test in the new Mt. Vernon, Illinois, pool, was fishing for lost sand pump after flowing for 2 minutes. Hole was given a 30-quart shot at 2744-60 ft just before the flow.

Williamson County: Drilling at about 1950 ft was Shell Oil Co.'s Madison Coal Company 1-B, a wildcat.

Indiana

Posey County: Gulf's Reis 1, W½ SW NW 23-7s-14w, wildcat two miles southwest of Mt. Vernon pool, cored dry Benoist sand at about 2510 ft with no shows and was drilling ahead at 2604 ft.

Dry through McClosky was a wildcat on Greathouse Island, in the Wabash River, Longhorn Oil Co.'s Greathouse 1, NW SE SE 11-7s-15w, at 2997 ft. No shows were reported.

Kentucky

Union County: O'Meara Brothers' Waller 1, Sun farm-out, wildcat on 1600-acre island at junction of Wabash and Ohio Rivers (12-P-18), was taking second core in Aux Vases at 2628 ft; in Aux Vases core at 2613-21 ft, recovered 2 ft, with 6 inches oil saturation. On hour drill-stem test got 60 ft oil-cut mud and no water; drilling ahead.

ILLINOIS FIELD COMPLETIONS

Edwards County—Bruce Martin's Blackburn 1, cn½ ne nw 6-1n-14w, abnd 3175 ft.

Franklin County—E. S. Adkins' CW&F Coal 1, nw se nw se 35-6s-2e, abnd 2170 ft.

Fayette County—Carter's First State Bank 1, ne se ne se 3-8n-3e, Bethel 1581-1614 ft, 600 bbls, 1614 ft.

Hamilton County—Shell's Dailey 11, nw se sw ne 12-6s-6e, pay 3011-31 ft, 364 bbls, 3162 ft.

Texas Co.'s Hall B-3, nw sw nw 17-6s-7e, Weller 2720-40 ft, 144 bbls, 3210 ft.

Jasper County—Simon Lebow's Lewis 1, 100 ft n of c sw nw 9-5n-14w, abnd 2935 ft.

Pure's Stanley 3, ce½ nw ne 19-5n-10e, McClosky 2808-70 ft, 151 bbls, 2870 ft.

Macoupin County—W. R. Holmes' Spence 1, sw nw sw 13-8n-9w, abnd 345 ft.

C. A. Griffin's Smith Heirs 1, sw ne sw 35-9n-8w, abnd 437 ft.

R. G. Whipple's Rhodes 2, sw se sw 35-9n-8w, abnd 385 ft.

Richland County—Pure's Coen 23, c sw se 4-3n-9e, Weller 2588-92 ft, 333 bbls, 2650 ft.

Wabash County—Hayes Drlg. Co.'s Hinderliter 2, sw se sw 4-1n-13w, Bethel 2533-44 ft, 60 bbls, 2544 ft.

Results on Industry's Prospecting Fronts

Completion reports account for 78 wildcats during the week, adding 15 new oil producers. This makes 236 oil wells added this year through drilling of 1701 wildcat tests. (See table below.)

Illinois: Clay County wildcat strikes.

Oklahoma: Wilcox pool in Oklahoma County.

Southwest Texas: Development spurts in Jackson County.

Texas Coast: Deep well projected at Old Ocean.

Louisiana Coast: Three more fields add deeper sands.

Wayne County—Webster & Wix's Ellis 1, ne sw sw nw 17-1s-5e, abnd 3010 ft.

Ben J. Taylor's Dickey 1, c nw ne 20-1s-6e, Rosiclare 3138-44 ft and McClosky 3168-84 ft, 66 bbls, 3199 ft.

United Prod'n. Co.'s Cariens 1, c se ne 25-1s-6e, McClosky 3239-54 ft, 281 bbls, 3254 ft.

Texas Co.'s Richards 2, c nw se 29-1s-6e, pay 3134-77 ft, 119 bbls, 3177 ft.

Sohio Producing Co.'s Harris 1, c sw se 19-1s-7e, McClosky 3235-44 ft, 780 bbls, 3244 ft.

White County—Longhorn's Eastwood 1, 60 ft w of se ne nw 22-3s-14w, abnd 3065 ft.

Longhorn's Helm 32, 57 ft e of sw ne sw 22-3s-14w, Tar Spgs 2150-70 ft, 100 bbls, 2170 ft.

Sun's Greathouse P-3, c ne sw 33-4s-14w, gas-input, 2727 ft.

Sun's Strow 3, se sw ne 7-4s-10e, Tar Spgs 2478-84 ft and 2502-15 ft, 35 bbls, 3230 ft.

Tide Water's Sisson-Higgins 1, nw nw sw 19-6s-11e, Tar Spgs 2272-88 ft, 28 bbls, 2288 ft.

ILLINOIS WILDCAT COMPLETIONS

Champaign County: Failure—R.F.G. Drlg. Co.'s Reynolds 2, ce½ ne se 1-22n-7e, abnd 300 ft.

Clinton County: Failure—Berry & Schiermann's Hofsommer 1, ne ne se 12-2n-4w, abnd 971 ft.

Coles County: Failure—B. F. Williams' Gwin 1, ne ne nw 33-12n-9e, abnd 1393 ft.

Edwards County: Failure—Deep Rock's Madden 1, c nw nw ne 35-1n-10e, abnd 3367 ft.

Fayette County: Failure—Illinois Expl'n. Co.'s Michel 1, cne ne 17-5n-4e, abnd 2504 ft.

Franklin County: Failure—Seaboard's Old Ben Coal 1, se se ne 30-7s-4e, abnd 3275 ft.

Gallatin County: Failures—Sinclair-Wyoming's Cox 1, sw sw sw 24-7s-8e, abnd 3083 ft.

Murphy Oil Co. et al's Spence 1, cn½ ne ne 33-7s-9e, abnd 3151 ft.

Carter's Crawford 1, ne se nw 11-8s-10e, abnd 2091 ft.

Hamilton County: Failure—Ohio's Miller 1, nw nw nw 25-6s-6e, abnd 3360 ft.

Jasper County: Failure—Sinclair-Wyoming's Kinsel 1, ce½ nw ne 29-7n-10e, abnd 2880 ft.

Jefferson County: Failure—Martin's Black 1, sw se sw 27-4s-2e, abnd 2900 ft.

St. Clair County: Failure—C. W. Young's Saverwein 1, se se nw 29-3s-6w, abnd 640 ft.

Washington County: New Field—Gulf's Leffner 1, nw ne nw 13-3s-2w, Bethel 1346-51 ft and Weller 1178-86 ft, 22 bbls, 1685 ft.

Wayne County: New Field—Pure's Marvel 1, c se nw 26-1n-8e, McCl 3065-93 ft, 92 bbls, 3145 ft.

Wayne County: Failures—Pure's Michels B-1, c se sw 26-2n-7e, abnd 3159 ft.

Albright et al's Collins 1, cs½ sw se 24-1s-9e, abnd 2205 ft.

Lario Oil & Gas' Dodge 1, ce½ ne ne 7-3s-5e, abnd 3193 ft.

Wayne County: New Field—Pure's Reynolds 1, c se nw 25-1s-7e, McClosky 3346-49 ft, 3374-83 ft, 26 bbls, 3494 ft.

White County: Failure—Sun's Bixenstine B-2, sw se nw 6-4s-10e, abnd 3366 ft.

White County: New Field—Sinclair-Wyoming's Cobbell 1, sw sw sw 36-6s-8e, Bethel 2865-77 ft and Aux V 2955-85 ft.

White County: New Field—Carter's Bryant 1, c se sw 15-7s-8e, Walters sand 2135-54 ft, 2156-61 ft, 21 bbls, 2167 ft.

ILLINOIS WILDCAT STARTS

Clay County—Kingwood et al's Essen 1, nw nw se 20-5n-7e, lcn.

Clinton County—Vorich Oil Co.'s Winkler 1, c sw se 5-1n-5w, dr.

Texas Co.'s Conrad 1, ne se sw 8-2n-1w, lcn.

Texas Co.'s Zimmerman 1, 14 ft n of ne se nw 19-2n-1w, lcn.

Wm. Murphy's Farmers' Bank 1, nw sw se 21-3n-3w, dr.

A. B. Schiermann's Loux's se sw sw 5-3n-2w, lcn.

Crawford County—Gail Moulton Co.'s Lamb

U. S. Drilling Operations in Week Ended July 25, 1942

STATE	ALL WELLS COMPLETED — THIS WEEK Total	Oil	Gas	Dry	*Miscel.	Total 1942	Total this Date 1941	‡WILDCATS COMPLETED — THIS WEEK Total	Oil	Gas	Dry	Distillate	Total 1942
Alabama						3	1						3
Arkansas	2	1		1		76	93	1			1		8
California	13	11		2		416	637	2			2		30
Colorado	1		1			8	10						
Georgia						2	1						2
Illinois	46	20		26		1,088	2,006	24	6		18		306
Indiana	10	2		8		223	300	5	1		4		50
Iowa							2						
Kansas	35	18	3	10	4	909	1,243	5			5		213
Kentucky	3	2		1		82	171	1	1				18
Louisiana	13	10		3		587	803	2	1		1		90
Michigan	12	3	3	6		391	457	4			4		94
Mississippi	1			1		68	102						17
Missouri						16	36						
Montana	2	1	1			102	109						
Nebraska						26	45						12
New Mexico	8	4	1	3		230	200	2			2		17
New York	28	17			11	679	497						1
Ohio	23	2	13	8		627	927						
Oklahoma	28	12		14	2	859	1,190	11	4		7		175
Pennsylvania	46	40	4	1	1	2,153	2,279						
Tennessee						7	11						
Texas	71	33	4	30	4	3,484	5,654	21	2	1	18		662
Utah							1						
Virginia						1							
West Virginia	23	3	14	4	2	418	377						
Wyoming	1	1				47	68						3
Total this week	366	180	44	118	24	12,502	17,220	78	15	1	62		1,701
Total last week	359	198	36	101	24	12,136	16,518	56	10		46		1,623
Total this year	12,502	6,630	1,022	3,219	1,631			1,701	236	28	1,432	5	

* Includes old wells deepened, water intake, gas input, salt water disposal, and distillate wells.
‡ OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.

Unit 1, sw ne ne sw 26-8n-13w, lcn.

Effingham County—Reward Oil Co.'s Zimmerman 1, c se sw 16-7n-5e, lcn.

J. F. Doubet's Kyle 2, nw ne nw sw 17-8n-6w, dr.

Franklin County—W. C. McBride, Inc.'s Jones 1, nw ne nw 29-5s-3e, lcn.

Smokey Oil Co. et al's Franklin Coal Co. 1, ne ne ne 31-7s-2e, dr.

Gallatin County—Aetna Oil Co. et al's Fostic 1, se se ne 10-8s-9e, lcn.

Hamilton County—Cameron Oil Co.'s Sharp 1, csw ne 4-6s-6e, dr.

Jefferson County—E. E. Gill Co.'s Thredkeld 1, c ne sw 13-4s-2e, lcn.

W. Duncan et al's Ernst 1, se sw se 24-1s-1e, dr.

Madison County—M. D. Brayant et al's Brechmann 1, sw nw se 27-3n-6w, lcn.

Marion County—Papoose Oil Co.'s Snelling 1, ne se sw, 35-4n-3e, lcn.

C. S. Beck Co.'s Phelps 1, ne nw ne 20-1n-4e, lcn.

Perry County—Magnolia's Restoff 1, ne ne sw 13-4s-1w, lcn.

Richland County—Boles Bros. Co.'s Petty et al 1, ne se ne 10-4n-14w, lcn.

Gulf's Wakefield 1, se se nw 28-5n-9e, lcn.

Wayne County—Pure's Pike 1, c nw nw 13-1s-7e, dr.

Williamson County—Shell's Madison 1, sw sw se 13-8n-3e, lcn.

INDIANA FIELD COMPLETIONS

Jay County—Harper's Fee 1, sw c ne 3-23n-12e, abnd 1016 ft.

Posey County—Central States' Roedel 1, se nw se sw 30-6s-12w, abnd 1803 ft.

Sun's Bennett 1, c se se 4-8s-14w, abnd 2748 ft.

Vanderburg County—Geo. Nelson's Stader 1, c ne se nw 32-6s-11w, 25 bbls, 1787 ft.

Case, Pomeroy & Co.'s Edmonds & Brose 1, se nw nw nw 16-7s-11w, abnd 1669 ft.

INDIANA WILDCAT COMPLETIONS

Gibson County: Failure—R. D. Brown, Inc.'s Dunlap 1, sw se sw 36-1s-10w, abnd 1810 ft.

Knox County: Failure—Clark Drlg. et al's Lewis 1, 90 ft n of nw nw se 26-2n-11w, abnd 1895 ft.

Posey County: New Field—Jarvis Bros et al's Sanders 1(2) sw se nw 26-6s-13w, McClosky 2733-39 ft, 18 bbls, 2903 ft.

Spencer County: Failure—Campbell & Farrin's Wilkenson 1, ne nw 3-8s-7w, abnd.

Vanderburg County: Failure—H. K. Riddle's Hutchinson 1, c nw nw ne 33-7s-11w, abnd 2565 ft.

INDIANA WILDCAT STARTS

Dubois County—H. C. Detrick Co.'s Fleig 1, ne ne se 9-3s-4w, lcn.

Posey County—G. L. Parris Co.'s Spencer 1, c se se 28-6s-14w, lcn.

Gulf et al's Ries 1, cw½ sw nw 23-7s-14w, lcn.

KENTUCKY FIELD COMPLETIONS

Henderson County—Snowden & McSweeney's Barnes 1, 23-P-26, Tar Spgs 1597-1605 ft, 24 bbls, 1605½ ft.

Ohio County—Ellis Massey's Heulette 1(2), 24-N-31, abnd 862 ft.

KENTUCKY WILDCAT COMPLETION

Daviess County: New Field—Sohio et al's Keller 1, 10-P-25, Jackson 1513-21 ft, 5 bbls, 1904 ft.

KENTUCKY WILDCAT START

Henderson County—Basin Drlg. Co.'s Strahl 1, 19-Q-26, lcn.

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5-42

Oklahoma

Wilcox Pool Opened In Oklahoma County

Wilcox pool opened in Oklahoma County. Second horizon at Pauls Valley. East flank of Crescent productive in Layton sand.

Oklahoma County: Denver Producing & Refining Co.'s Randolph 1, SW SE NE 30-14n-3w, flowed 10 bbls hourly 44-gravity oil, with 200 pounds on the head from second Wilcox sand to open a new pool. Hole is bottomed at 6667 ft, 12 ft in the sand. This strike is east of the north end of Edmond field, which is itself defined along the east flank by a fault and by dry holes.

Logan County: Crescent field is being extended in east in Layton sand. Development is both by plugging back wells depleted in Wilcox and by new drilling. Last well into the new zone is Davon Oil Co.'s Short 1, SW NW NE 27-12-4w, which made 120 bbls on incomplete swabbing test at 4940-4974 ft.

Garvin County: Two wells completed in a Pennsylvanian sand at Pauls Valley to prove the second pay for the field. Pure's Cashion-Teter 1, SE SW NE 31-4-1e, 228 barrels from 4115 ft after plugging back from dry Bromide at 4336 ft. The company's Teter 8, SE SE SW 31-4-1e, plugged back to this pay. The field was given a 40-acre extension north and has 8 producers.

OKLAHOMA FIELD COMPLETIONS

Creek County: Glenn—Sinclair Prairie's Berryhill 43, c s½ nw se 16-17n-12e, Glenn 1414-1585 ft, shot 140 qts, pump 1 bbl oil, 4 bbls water, 1587 ft.

Kay County: Vernon—Clipper Oil Co.'s 1, nw nw nw 21-29n-1e, Miss 3390 ft, pump 109 bbls oil, 10 wtr, 3448 ft.

Lincoln County: East Sporn—Skelly's Rush 1, nw se se 22-17n-3e, Wilcox 4554 ft, perf 4526-76 ft, abnd 4619 ft.

Noble County: Otoe—Superior's Faubian 3, c w½ nw se 16-22n-1e, Osage Layton 3353 ft, perf, shot 30 qts, flow 170 bbls, 3399 ft.

Okmulgee County: Aztec—Stekoll's Holmes 1, 120 ft w of ne sw ne 7-11n-12e, Deaner 2315 ft, pay 2357-61 ft, flow 170 bbls, 2361 ft.

Osage County: Pershing—Link Oil Co.'s 13, nw se 28-25n-9e, Miss 2089 ft, abnd 2194 ft.

Osage County: Quapaw—A. G. Oliphant's 1, sw sw se 28-25n-11e, Bartlesville 1667-1780 ft, shot 200 qts, Miss 1806 ft, abnd 1782 ft.

Pontotoc County: East Ada—W. C. McBride's Adair 1, sw sw se 13-4n-7e, Viola 4070 ft, abnd 4174 ft.

Pottawatomie County: West Hotulke—C. W. Sharp's Hudson 2, c se ne 28-9n-4e, Hunton 4277 ft, pay 4280-4315 ft, perf, 5000 gals acid, pump 200 bbls, 4735 ft.

Pottawatomie County: King—Creekmore-Rooney's Tiller 1, se nw nw 32-10n-5e, Wilcox 4487 ft, abnd 4490 ft.

Pottawatomie County: Prague—Mid-States' Wilson 2, nw sw nw 4-11n-6e, Skinner 3259 ft, pay 3257-65 ft, shot 10 qts, pump 11 bbls oil, 4 water, 3273 ft.

Seminole County: Sasakwa—Magnolia et al's Spillman-Harris Unit 1, c sw ne 12-6n-7e, 2nd Calvin 1227 ft, abnd 1307 ft.

Seminole County: Cromwell—Mico's Ashbrook 2, c sw ne 33-10n-8e, Senora 2010 ft, abnd 2083 ft.

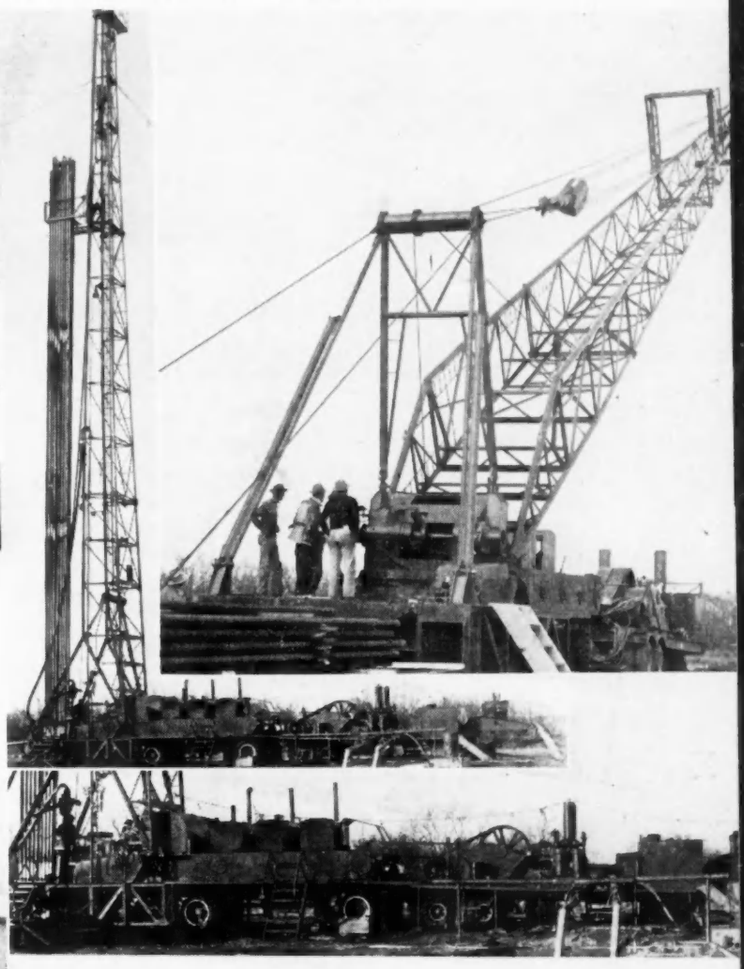
Stephens County: Velma—Skelly Oil's Frensley "B" 1, sw se sw 25-1s-5w, sand

In VENEZUELA

These MOTOHOISTS for well servicing are mobile and self-contained, and especially equipped for Venezuelan operation. Some are electrically operated while others are Diesel powered. Several are without masts for operation where derricks are available — others are equipped with automatic masts. All can be used with derrick.

In CALIFORNIA

U 10 SPITFIRE RIG (450 Horsepower) equipped with 3 WAK Waukeshas for fast 6500 foot conventional drilling. This UNIT RIG set a speed record on its first location.



In TEXAS

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In OKLAHOMA

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These Units are Equipped with UNIT RIG'S AIR-O-MATIC Clutches

UNIT RIG & EQUIPMENT CO.
TULSA OKLAHOMA U.S.A.

2004-06 ft, sand 2012-22 ft, sand 2022-27 ft, shot 10 qts, 83 bbls, 2029 ft.

Stephens County: Woolsey—Fair Operating Co.'s Baker A 4A, sw se ne 25-2s-6w, sand 1766 ft, lime 1772-74 ft, flow 10 bbls, 1774 ft.

OKLAHOMA WELLS DEEPENED

Caddo County—Texas Co.'s Z. N. Smith 3, sw se nw 2-5n-12w, otd 3430 ft, drilled to Bromide, flow 345 bbls, 3620 ft.

Pottawatomie County: St. Louis — Reda Pump's Bewley 1, sw se nw 36-7n-4e, otd 4232 ft, dolomite 4132 ft, pb 4250 ft, pump 156 bbls oil and 264 bbls water, 4250 ft.

OKLAHOMA WILDCAT COMPLETIONS

Atoka County: Failure—C. C. Logan et al's Leader 1, c sw se se 2-3s-10e, Brn. sand 4350-4500 ft, Wapa lime 6455 ft, abnd 6561 ft.

Caddo County: Failure—Amerada's Smith 1-A, c se sw 14-10n-13w, abnd 8000 ft.

Carter County: Failure—Scott's Simpson-Fell 1, c sw ne sw 8-5s-1e, sandy limestone 1030-58 ft, Arb lm 1740 ft, abnd 1785 ft.

Kingfisher County: Failure — Union of Calif.'s Brown 1, sw se nw 11-19n-7w, Herr, 2080 ft, Winfield 2150 ft, Neva lime 2630 ft, Cushing 2800 ft, Foraker 2860 ft, Deer Creek 3560 ft, Lecom 3750 ft, 1st Hoov 3830 ft, Carmi lime 2930 ft, Carmi sand 3960 ft, Oread 4130 ft, Tonk lime 4480 ft, Tonk sand 4510 ft, U Layton 5040 ft, Brn shale 5140-50 ft, L Layton 5620 ft, Cleve 5780 ft, big lime 6050 ft, Peru 6110 ft, Osw 6220 ft, Miss (Chester) 6750 ft, Miss Boone (Corr) 7080 ft, Wood 7560 ft, Hunton 7624 ft, Syl 7788 ft, Viola 7925 ft, dolo 7990 ft, Marshall 8079 ft, Marshall sand 8125-35 ft, sandy dolo 8163 ft, 2nd Wx 8169 ft, abnd 8225 ft.

Logan County: Failures—Cities Service's Underwood 1, c sw sw 11-15n-4w, U Paw 2770 ft, M Paw 2980 ft, L Paw 3220 ft, Layton 4986 ft, Base Penn & Wood 6090 ft, Hunton 6165 ft, abnd 6747 ft.

Skelly's McCormick 1, nw se sw 4-16n-1w, Avant 3750 ft, Hogs 4240 ft, Ccb 4480 ft, 1st Wx 5595 ft, pb 5605 ft, abnd 5700 ft.

Logan County: New Field—Gulf's Pulliam 1, c ne ne 20-16n-4w, Herr 1790 ft, Paw 2840 ft, Oread 4025 ft, Tonk lm 4420 ft, Avant 4660 ft, Hogs 5300 ft, OC Ccb 5597 ft, Miss 5395 ft, lost circ in Miss 6650 ft, 7147-52 ft, dolo 6746 ft, Hunton 6817 ft, Syl 6975 ft, Dense 7125 ft, 1st Wx zone 7255 ft, Sdy dolo 7409 ft, flow 58 bbls oil, 10 wtr, 7409 ft.

Osage County: New Field—Dunn & Miller's Osage 1, sw ne ne 36-24n-10e, Bart sand 1589-1652 ft, shot 240 qts 1588-1646 ft, 30 bbls oil 3 wtr, 1652 ft.

Pawnee County: Failure—McBride's Gilbert 1, se ne sw 19-23n-3e, Lay 2760 ft, show oil 2760-90 ft, big lime 3210 ft, Osw 3340 ft, Miss 3867 ft, Wood 4155 ft, Trace Mise 4185 ft, Viola 4186 ft, dolo 4208 ft, sdy dolo 4215 ft, Green dolo sand 4237-50 ft, white sand 4253-85 ft, abnd 4253 ft.

Pottawatomie County: New Field — Ed Highfill et al's Bodkins 1, c nw se 21-8n-4e, Hunton 3944 ft, deepened 3965 ft, acidized 1000 gals, 900 bbls oil, 5/16-in on 2½ in, 3965 ft.

Pottawatomie County: New Field—Smith Bros.' Dawson 1, c ne ne 6-9n-3e, Paw 1870 ft, Belle City 3140 ft, Hog 3575 ft, Checker 3890 ft, Osw zone 4595 ft, Earls zone 4835 ft, Uncon 2985 ft, Mayes 5095 ft, Wood 5155 ft, Hunton 5271 ft, Syl 5360 ft, Viola 5454 ft, Dense 5505 ft, Dolo 5545 ft, flow 21 bbls oil, 140 water, 5687 ft.

OKLAHOMA WILDCAT STARTS

Creek County—E. R. Black's Smith 14, c n½ n½ se 13-14n-10e, dr.

Lastecas' Jackson 1-A, sw se ne 9-18n-9e, lcn.

Jefferson County—Norville et al's Snyder 1, c ne nw 3-5s-9w, dr.

Lincoln County—Magnolia's Perkins 1, nw ne sw 31-14n-6e, dr 361 ft.

Noble County—Morgan's Devore 1, nw nw sw 17-24n-1e, cellar.

Okfuskee County — British-American's Comm. 1 "A," sw nw sw 12-11n-9e, lcn.

Osage County—Peters Pet.'s Osage 1, ne ne ne 11-22n-11e, lcn.

Mohican Drlg. Co.'s Osage 1, nw ne ne 9-24n-6e, woc.

Pawnee County—Keener Oil & Gas' Glen 1, ne ne nw 27-21n-5e, lcn.

Pottawatomie County—Crosbie & Atlantic's Turner 1, ne nw sw 1-9n-4e, dr 3250 ft.

Seminole County—Atlantic et al's Whistler 1, nw sw se 18-11n-5e, lcn.

J. E. Hall et al's Stockton 1, se ne se 2-6n-5e, spud.

CONSERVE Your BRAKE LININGS
with these tested methods

THESE SUGGESTIONS are presented by Johns-Manville as time-tested ways of conserving equipment and of increasing the life and performance of brake linings.

1 Increase air flow around clutches and brakes to assure maximum heat dissipation

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3 Be sure that brakes and clutches are properly adjusted to eliminate unequal wear

4 Never use oil, clay or other foreign substances on linings to control friction

For further suggestions on friction materials and on more efficient use of packings, insulations, roofings and refractory cements, write for the new J-M manual, "101 Suggested Good Operating Practices." Johns-Manville, 22 E. 40th St., New York, N. Y.

For Maximum Efficiency, Start Rigs Right* with
JM Johns-Manville 420 ROTARY LINING
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Kansas

Reno County Wildcat Has Kansas City-Lansing Show

Lion Oil Refining Co.'s Bughy 1, C WL SW NE 13-24-9w, Reno County picked up a good show in Kansas City-Lansing lime at 3269-3637 ft but has not completed a test of the formation.

Barber County: Oil is showing from Simpson sand at 4991 ft in Pryor & Lockhart's Ewers 1, SWc 7-32-14w, near Sun City pool. Adjacent production is from Misener and Kansas City-Lansing.

Kearny County: Patterson pool, westernmost oil production in Kansas, is gaining its third well, Stanolind's Biessel 1, C E½ NW NW 25-22-38w, an offset to the discovery. Pennsylvanian was topped at 4739 ft and on swab made 14 barrels hourly.

McPherson County: Lindsborg pool was extended ½ mi by J. E. Mabee's Carlson 1, C W½ SE SE 6-17-3w, which completed in Viola lime at 3349-55 ft.

Edwards County: Cities Service's English 1, NEc 8-25-16w, east of abandoned McCarty field, is testing and plugging back from Arbuckle lime at 4650 ft where it failed to show. Viola lime at 4350 ft was tested for 11 barrels of oil in 8 hours, then treated with 5000 gallons acid and tested 2 barrels oil per hr and some water. Hole has been plugged back for a test of Lansing City-Lansing at 3784 ft which earlier showed saturation.

KANSAS FIELD COMPLETIONS

Barton County: Stickney—Derby's Susank 1, se se nw 19-16s-13w, Arb 3410 ft, abnd 3439 ft.

Skelly's Susank 2, se se ne 19-16s-13w, Arb 3393 ft, 2500 gals acid, pump 492 bbls, 3402 ft.

Barton County: Kraft-Prusa — Champlin's Nagel 1, ne se se 14-17s-11w, Arb 3328 ft, abnd 3343 ft.

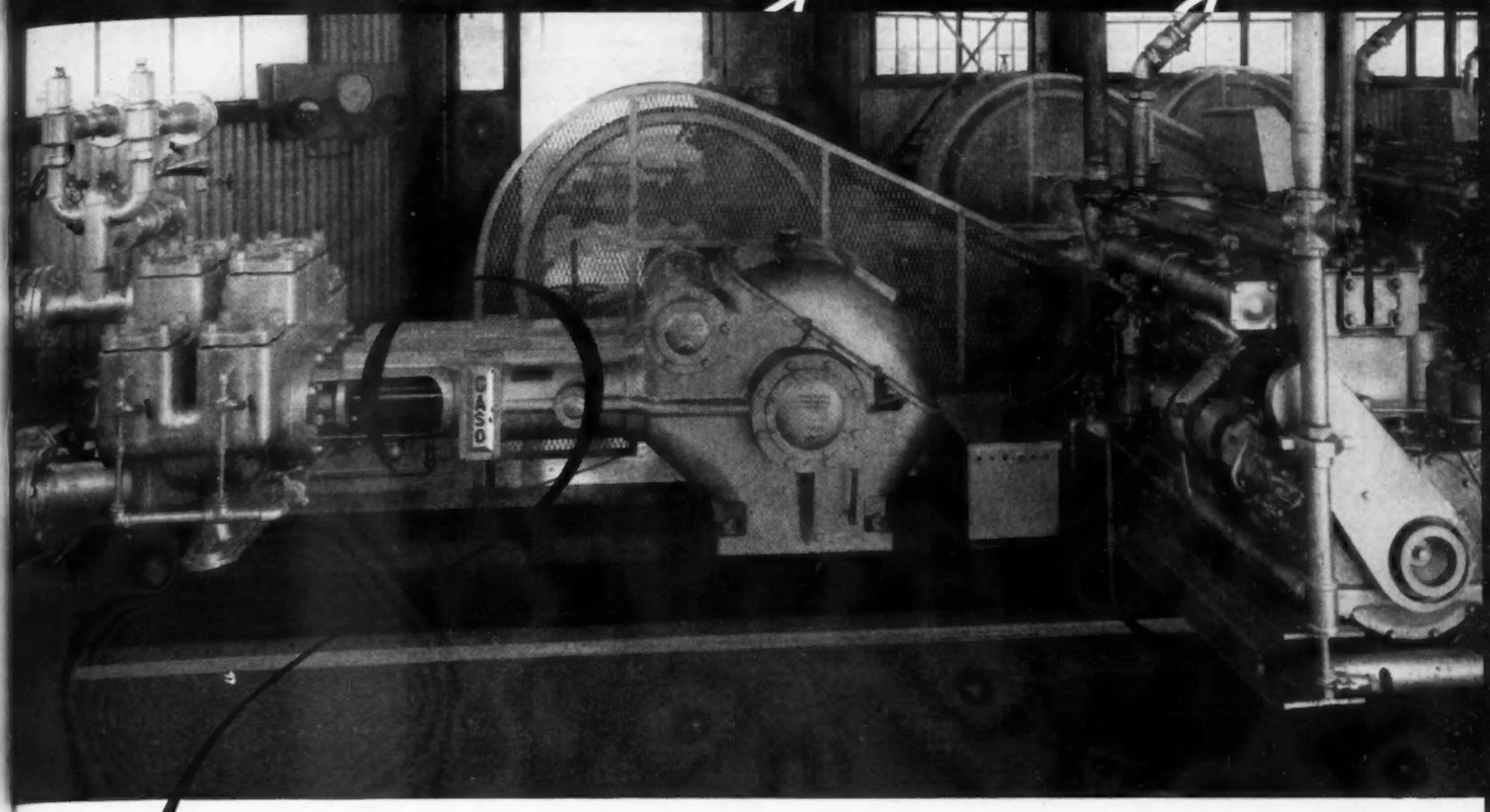
Cowley County: Couch — Ryan Consolidated's Victory Life B-1, sw nw se 12-30s-5e, Bart 2816 ft, shot 60 qts 2825-45 ft, flow 217 bbls, 2845 ft.

Ellis County: Bemis—Cities Service's Dehoff 2, nw sw nw 30-11s-16w, Arb 3363 ft, 2000 gals acid, 1768 bbls, 3376 ft.

Champlin's Gladhart 4, c sw ne 29-11s-17w, Arb 3586 ft, perf 3590-3603 ft, 2500 gals acid, 200 bbls oil, pb 3607 ft, td 3625 ft.

Ellsworth County: Wilkens—Atlantic Strattman 1, c n½ ne ne 23-17s-10w, Arb 3324 ft,

WHEN THE INSTALLATION BEARS THE STAMP OF *Real Engineering*—



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You sense it the moment you see some pump installations—the evidence of the engineer. They are planned to do a specific job, and engineered to do it well. And when you look more closely at the pumps, the chances are you'll see the GASO nameplate.

The installation pictured is a case in point. Designed for moving crude from rectifying plant to the first pipeline station, it has been skilfully tailored to meet any condition that may arise. Three pumps are arranged to operate singly, jointly or in unison. Usually, two pumps are in service with the third available for standby duty. Peaks, low spots and normal requirements are all provided for.

The pumps are Gaso Figure 1743 Horizontal Duplex Power Pumps, fitted with hardened and ground surfaces, alloy liners, cast iron pistons and rings and packings especially selected for this service. A vapor phase cooling system is incorporated in the installation.

Perhaps it's because Gaso Pumps are so well engineered. Perhaps it's their flexibility or performance record. Whatever the reason, Gaso Pumps and pump engineers have gotten along famously together for 25 years. Ask for catalog.... Gaso Pump & Burner Mfg. Co., 902 E. First Street, Tulsa, Oklahoma. Export Office: 149 Broadway, New York. Houston: 5716 Buffalo Speedway. Los Angeles: Service Oil Field Supply Co., 5333 S. Riverside Drive.

GASO PUMPS
for every oil industry need

shot 4 qts, 1000 gals acid, 90 bbls oil, 3239 ft.

Kearny County: Larkin—Fin-Ker's Campbell 6, csl 7-25s-35w, Ft. Riley prod, 1000 gals acid, 23.750 MCFG, 2654 ft.

Jefferson County: McLouth — Hatcher & Fisk's Hesse 1, c ne se 20-9s-20e, Bart 1400 ft, 2.750 MCFG, 1423 ft.

Mosley & Adams' McLaughlin 1, nw se ne 5-10s-20e, Miss 1445 ft, pay 1575-85 ft, pump 50 bbls, 1598 ft.

Leavenworth County: McLouth—McLaughlin's Schmidt 1, c ne sw 1-10s-20e, sand 1382 ft, pb 1392 ft, 3.250 MCFG, 1399 ft.

Reno County: Schweizer — Transwestern's Potter 1, sw sw se 36-22s-10w, Viola 3683 ft, 2000 gals acid, 268 bbls oil, 69 water, 3725 ft.

Reno County: Hendrickson—Cities Service's Hinshaw A-6, sw se sw 2-23s-10w, Viola 3769 ft, abnd 3787 ft.

Reno County: Peace Creek NE—Leader Oil Co.'s Tonn 8, sw nw se 11-23s-10w, Viola 3753 ft, 500 gals acid, 3000 bbls, 3759 ft.

Cities Service's Esty 3, sw sw nw 14-23s-10w, Arb 3824 ft, salt water disposal well, pb 3814, td 4000 ft.

Reno County: Peace Creek—Cities Service's Heylmun 5, sw nw ne 15-23s-10w, Viola 3775 ft, 5000 gals acid, pump 64 bbls oil 20 bbls water, 3801 ft.

Republic Nat's Werner 2, sw ne nw 15-23s-10w, Viola 3749 ft, 3000 gals acid, pump 1170 bbls, 3771 ft.

Cities Service's Krey B-1, sw nw ne 22-23s-10w, Viola 3772 ft, 500 gals acid, 3000 bbls, 3778 ft.

Reno County: Peace Creek SW—Cities Service's Wyss 1, sw se se 29-23s-10w, Arb 3774 ft, pb 3763 ft, abnd 3812 ft.

Rice County: Smyres—R. S. Slade et al's Mattson 2, 145 ft w of c nw se 25-19s-6w, Miss 3402 ft, pump 324 bbls, 3418 ft.

Nelson Drlg.'s Smyres 2, ne sw nw 36-19s-6w, Miss 3274 ft, pump 126 bbls, 3303½ ft.

Transwestern's Braden 1, ne ne nw 1-20s-6w, Miss 3337 ft, pump 188 bbls, 3363 ft.

Russell County: Fairport—B. & R. Drilling et al's Shober 1, c w½ sw se 9-11s-15w, Arb 3425 ft, pb 3375 ft, perf 3008 ft, abnd 3470 ft.

Russell County: Hall-Gurney — Colorado Pet's Resley 1, nw sw se 32-14s-13w, Lansing 2865 ft, 10,000 gals acid, pump 754 bbls, 3156 ft.

Russell County: Trapp—Coralena's Sellens 2, c n½ n½ se 17-15s-13w, Arb 3232 ft, pump 50 bbls, 3253 ft.

Russell County: W. Trapp—Derby et al's Dietz 2, c s½ sw ne 22-15s-14w, Arb 3306 ft, 2000 gals acid, 1228 bbls, 3313 ft.

Russell County: Dovanan—Wolf-Creek Oil's Donavan C 1, c s½ ne sw 10-15s-15w, Lansing 3043 ft, 7 bbls oil, 5 wtr, pb 3255 ft, td 3319 ft.

KANSAS WELLS DEEPENED

Butler County: Augusta—I. Mokk's Loomis 10, nw sw nw 15-27s-4e, otd 2035 ft, Wilcox 2467 ft, pay 2468-73 ft, 2478-83 ft, 25 bbls, 2491 ft.

Russell County: Fairport—C. E. Liggett's Chrisler 1, sw nw sw 9-11s-15w, otd 3105 ft, Arb 3379 ft, pump 25 bbls, 3385 ft.

C. E. Liggett's Hines 1, c nw nw 16-11s-15w, otd 3244 ft, Sooy Congl 3372-3400 ft, pump 40 bbls, 3400 ft.

KANSAS WILDCAT COMPLETIONS

Ellsworth County: Failure — Falcon - Seaboard et al's Bruning 1, ne ne se 9-15s-9w, Topeka 2405 ft, Lansing 2700 ft, Base KC 2980 ft, Congl 3060 ft, Arb 3102-31 ft, abnd 3131 ft.

Reno County: Failure—H & P's Wisby 1, ne ne ne 18-22s-9w, Ft Riley 1520 ft, Florence 1618 ft, Neva 1928 ft, Topeka 2630 ft, Lansing 3115 ft, Sooy 3422 ft, Measener 3483 ft, Viola 3518 ft, Viola Chert 3546 ft, cored 3562-68 ft, Simpson 3618 ft, Arb 3675 ft, abnd 3725 ft.

Rice County: Failures — Westgate - Greenland's Appel 1, ne ne nw 3-19s-6w, Lansing 2793 ft, Miss 3355 ft, Base Miss 3433 ft, abnd 3437 ft.

Cities Service's Wolf 1, se se ne 6-21s-6w, Miss 3474 ft, 3476 ft, Base Miss 3529 ft, abnd 3532 ft.

Stafford County: Failure—Fain's Stroble 1, ne ne sw 9-22s-14w, Anhy 860 ft, Lansing 3485 ft, soft 3580-95 ft, Topeka 3145 ft, Ft. Riley 2000 ft, Base KC 3740 ft, Congl 3801 ft, Viola 3811 ft, Simpson 3838 ft, Arb 3878 ft, abnd 3908 ft.

KANSAS WILDCAT STARTS

Barber County—Great Lakes Carbon's Werner 1, c se se 20-30s-14w, mim.

Butler County—K. T. Weidemann's Edgar 1, ne ne ne 10-28s-8e, rig.

Ellis County—Darby's Kansas Experimental Station 1, nw ne nw 4-14s-18w, sur.

Finney County — Kansas Nebraska Pipe Line's Layman 1, c of sec 13-24s-34w, dr 2733 ft.

Marion County—Superior's Graham 1, sw se sw 2-21s-5e, dr 1548 ft.

Norton County—Cities Service's Harrison 1, sw sw ne 18-5s-21w, lcn.

Pawnee County—Herndon's Singer 1, sw sw se 1-23s-15w, dr 1500 ft.

Pratt County—Herndon's Shearer 1, sw sw sw 17-29s-12w, mim.

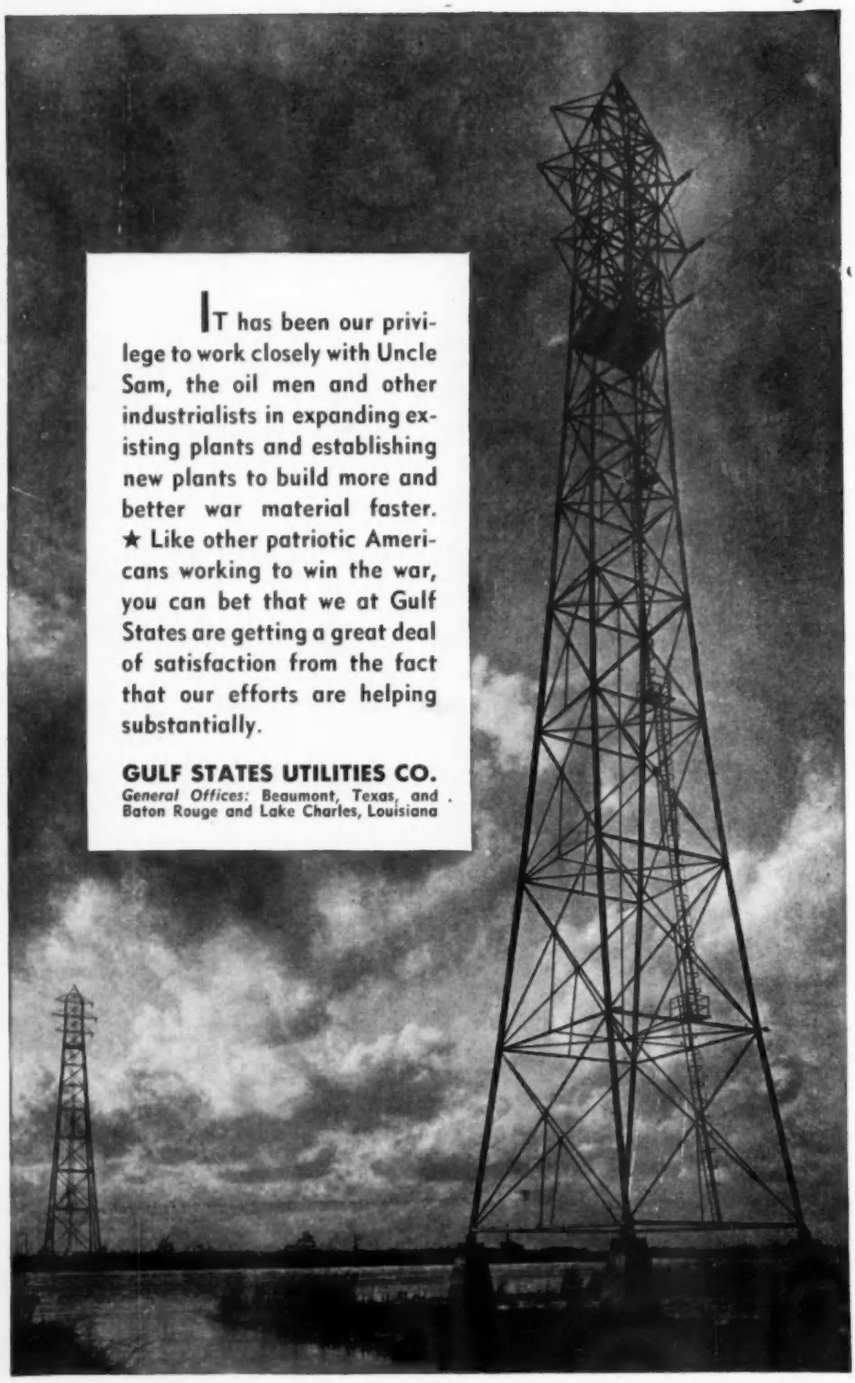
Reno County—Lion's Bughy 1, c w½ sw ne 13-24s-9w, dr 1500 ft.

Russell County—Aylward Production et al's Ehrlich 1, sw sw nw 15-13s-14w, lcn.

Stafford County—Cities Service's Liberty Life 1, se se nw 1-23s-14w, mim.

MISSOURI WILDCAT START

Caldwell County—Tiger Oil & Pipe Line Co.'s Pollard 1, c e½ sw se 13-55n-29w, sd.


IT has been our privilege to work closely with Uncle Sam, the oil men and other industrialists in expanding existing plants and establishing new plants to build more and better war material faster.
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GULF STATES UTILITIES CO.
General Offices: Beaumont, Texas, and Baton Rouge and Lake Charles, Louisiana

Rocky Mountain Area

Powder Wash and Circle Ridge Fields Extended

Powder Wash in Colorado and Circle Ridge in Wyoming extended. Six locations at Pilot Butte, one three miles north of production. Wall Creek dry in South Cole Creek wildcat.

Powder Wash: Powder Wash was extended half mile northeast by Mountain Fuel Supply Co.'s Allen 2, SE NE NW 32-12n-97w, making 11.66 gas through perforations at 2130-37 ft and 3996-4006 ft; 7-in on bottom at 4006 ft; 1459 lbs rock pressure. It is ¾ mile northeast of oil production.

Circle Ridge: Continental's Shoshone Indian Lease-767 2, SW NW SW 6-3n-2w, flowed 96 bbls from Tensleep to extend this field slightly south.

COLORADO COMPLETION

Moffat County: Powder Wash—Mountain Fuel's Allen 2, se ne nw 32-12n-97w, 11.66 ft gas, perf 2130-37 and 3996-4006 ft in Washatch, 8⅝-in set td 4006 ft, 1459 lbs rock pressure.

MONTANA COMPLETIONS

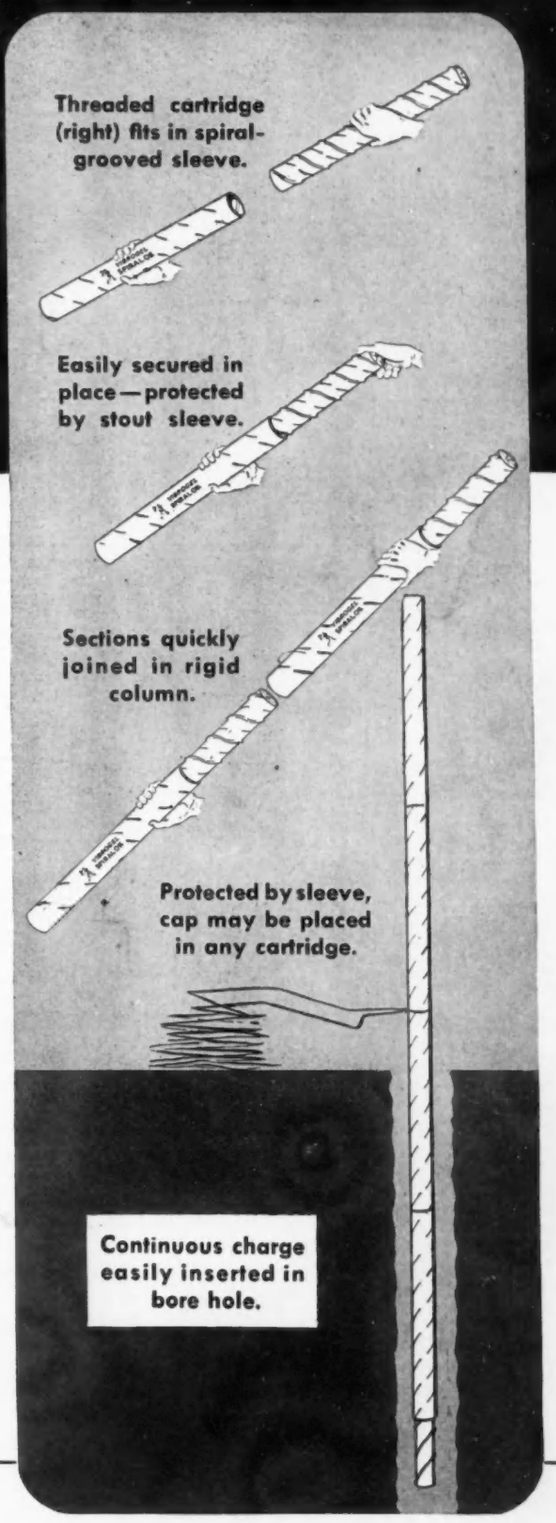
Toole County: Kevin-Sunburst—Consolidated Gas Co.'s Lutz 4, cne se 33-33n-2w, 2.5 ft gas, Sunburst sand 1436-70 ft.

Welch Brothers' Zachor 5, cwl nw ne 29-35n-1w, flow 8 bbls, Sunburst, pb to 1348 ft from 1445 ft.

WYOMING COMPLETION

Fremont County: Circle Ridge—Continental's Shoshone Indian Lease-767 2, sw nw sw 6-3n-2w, flow 96 bbls, Tensleep 460-665 ft.

SPIRALOK *for* Seismic Blasting


Threaded cartridge (right) fits in spiral-grooved sleeve.
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Sections quickly joined in rigid column.
Protected by sleeve, cap may be placed in any cartridge.
Continuous charge easily inserted in bore hole.

For years, geophysical crews have wanted a convenient, speedy, and effective means for joining dynamite cartridges end-to-end in a rigid column. Here it is, an exclusive Hercules development. The Spiralok Shell makes it easy to place an unbroken charge in bridged and sandy holes.

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N-22

West Texas

Chancellor Confirmation Good Flowing Well

Second well in Pecos County's single Delaware pool flowing and another test starting. Crane County wildcat is dry in upper Ellenburger. Decision near on two wells near Embar pool's deep oil discovery.

Pecos County: Pure's Legros 1, west offset its Chancellor pool discovery, flowed 715 bbls 37-gr oil in 21 hours through casing after being shut in 30 hours to erect storage. Production is from top pay at 5072 ft, elevation 3306 ft, 5 ft high. Used cable tools below 5004 ft with 7-in at 4657 ft. Discovery made small flowing well after plugging back from 6001 ft for nitro shots and acid. Company has 16,500-acre block, and starting Odneal 1 as south offset discovery.

Andrews County: Atlantic et al's University-Texu 1-A, geophysical prospect, drilling hard lime at 8250 ft, with Permian-detrital contact 8075 ft, elevation 3311 ft. Humble's Sims 1, northwest corner of county, drilling cherty-lime 9410 ft, with base of Permian undetermined. In Embar pool, Phillips' University-Andrews 3, ¼ mile southwest of its 7855-ft Ellenburger discovery, coring lime, Ordovician section, 7810 ft, and University-Andrews 4, ½ mile northwest of deep producer, has logged broken saturation in coring to 7695 ft, elevation 3259 ft. The Embar prospect and nearby West Andrews pool have been the scene of a substantial drilling program the past several months to forestall lease expirations.

Crane County: Magnolia's Glenn 1, situated on a strike between Sand Hills and Abell deep areas, resumed coring at 5265 ft after recovering 4 ft rotary mud on drill stem test at 5250-65 ft in Ellenburger, topped 5258 ft, elevation 2436 ft, 749 ft high to Continental's Jones 1, small flowing well in Waddell (Simpson) sand at 5700-63 ft after plugging back from dry Ellenburger at 6045-6146 ft. Glenn 1 logged about 8-ft detrital, or Simpson, above Ellenburger, while Jones 1, nearest producer, logged 500 ft of Simpson.

Reagan County: Big Lake Oil Co.'s University 20-C, northeast edge of the Big Lake field, has partially defined the deep zone in drilling below 8850 ft, without shows, in Ellenburger, topped 8535 ft, elevation 2674 ft.

Crockett County: Two extensions given Clara Couch pool, making total 6 oil wells and small gasser with 5 failures. Humble's Couch 1-B, 1250 ft east its 2091-ft pumper, recorded first natural flow for area for initial 219 bbls 27.6-gr ⅞-in choke, pays 1850-72 ft and 1900-17 ft, elevation 2443 ft. Roger Harris and Curt Inman's Padgett-Humble 1, ¼ mile southeast outpost, acidizing with 1800 ft oil in hole, broken pay 2100-31 ft.

WEST TEXAS FIELD COMPLETIONS

Cochran County: Slaughter — Magnolia's Woodley 30, NWc lab 9, Oldham CSL leag 57, flow 544 bbls 2-in, acid 9000 gals 4913-65 ft.

Texas Co.'s Mallet 6-F, SWc lab 14, leag 51, Scurry CSL, flow 800 bbls 2-in, acid 10,000 gals 5010-55 ft.

Crane County: Sand Hills—Magnolia's Lea 15, c ne nw PSL 9, blk B-32, flow 779 bbls ½-in natural, 4401-73 ft.

Crockett County: World-Powell — H. G. Eastham Jr. et al's Powell 2-A, 880 ft from n and 440 ft from w GC&SF 52, blk BB, pump 28 bbls, acid 2000 gals 2549-2607 ft.

M. & M. Production Co.'s Powell-Gulf 6-D, 440 ft from n and 2200 ft from w GC&SF 63, blk BB, pump 131 bbls, acid 1000 gals 2652-55 ft.

Hockley County: Slaughter—DeKalb Agricultural Assn.'s Alexander 2, 1874 ft from n and 554 ft from e PSL 7, blk X, flow 1463 bbls cas, acid 10,000 gals 5012-27 ft.

Honolulu's Mallet 14-A, NEc lab 11, leag 52, Scurry CSL, flow 200 bbls 2-in, acid 14,000 gals 4958-5038 ft, pb to 5014 ft.

Honolulu's Slaughter 40-B, NEc lab 51, leag 37, Zavalla CSL, flow 1478 bbls 2½-in, acid 10,000 gals 4895-4980 ft.

Mitchell County: Northwest—F. W. Merrick, Inc.'s Mills 5, 330 ft from n and 1441 ft from w sec 18, G. H. McGinnis sur, pump 91 bbls, shot 720 qts 1550-1710 ft.

Pecos County: Taylor-Link—J. D. Lancaster et al's University-Shell 2-C, se sw sw sec 28, blk 16, pump 12 bbls oil, 20 water, shot 100 qts 1457-97 and 20 qts 1532-40 ft, td 1556 ft.

Winkler County: Weiner—Ralph Lowe et al's Brown-Altman 4, sw ne nw PSL 24, blk B-5, flow 154 bbls 1-in, shot 180 qts 3070-3183 ft.

Yoakum County: Wasson—Belfort Oil Co.'s Stanford-Humble 1, 560 ft from n and 2080 ft from w sec 836, flow 480 bbls ½-in, acid 9000 gals 4960-5160 ft.

WEST TEXAS WILDCAT COMPLETIONS

Cochran County: Oil Discovery—Sunray Oil Co.'s (was J. T. O'Neal Drl. Co.) Wright 1, c lab 14, leag 61, Martin CSL sur, 3½ mi nw prod, elev 3705 ft, anhydrite 2220 ft, brown lime 3700 ft, San Andres 4040 ft, pump 237 bbls 20-gr, 12 percent water, acid 12,000 gals, perf 4953-72 ft, pay 4810-4973 ft, td 4998 ft, pb to 4975 ft.

Gaines County: Failure—Argo Oil Corp.'s Granberry-Humble 1, c nw nw PSL 4, blk A-9, elev 3654 ft, anhydrite 2270 ft, Yates sand 3500 ft, main lime 4620 ft, abnd 5508 ft.

WEST TEXAS WILDCAT START

Winkler County—Shell's W. D. Blue 1, se nw nw T&P 15, blk 46, T-1-S, lcn 8500-ft test.

NEW MEXICO FIELD COMPLETIONS

Eddy County—Barney Cockburn et al's Etz 4, c sw ne 35-16s-30e, flow 60 bbls 2-in, shots 200 qts 3325-75 ft; 200 qts 2956-3034 ft, td 3403 ft.

Danciger's Turner 15-A, c n½ se nw 19-17s-31e, flow 40 bbls 2-in, acid 5000 gals 3434-3442 ft.

Geo. B. Williams et al's Brooks 2-B, c se nw 27-17s-27e, shot 50 qts 2250-70 ft, abnd 2442 ft.

Neil H. Wills et al's State 4, sw nw se 17-20s-30e, pump 120 bbls, natural, lime 1484-1539 ft.

Lea County: Maljamar—Phillips' State-Lea-Mex 1, c sw sw 19-17s-33e, extension, elev 4060 ft, salt 1270-2300 ft, Yates 2455 ft, red sand 3450 ft, San Andres 4205 ft, flow 109 bbls 2-in, acid 500 gals, shot 400 qts 4247-4316 ft.

Lea County: Rhodes—Krupp-Flaherty Oil Co.'s Moberly 3-C, c sw nw 21-26s-37e, 6,700,000 sweet gas natural, 3117-3247 ft.

NEW MEXICO WILDCAT COMPLETIONS

Lea County: Failures—Gordon M. Cone et al's State-Superior 1, c ne sw 30-18s-37e, elev 3732 ft, jkd 810 ft.

Richmond Drl. Co. et al's State-Shell 1-B, c ne se 10-17s-33e, elev 4159 ft, salt 1588-2690 ft, red sand 3134 ft, brown lime 4175 ft, abnd 4805 ft.

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North Texas

Bryson Deep Test Has Mississippi Saturation

Bryson field deep test running pipe on Mississippi saturation. Majors becoming more active in districts. Routine developments and exploratory work as pipe lines seek additional oil. K-M-A fields Ellenburger horizon, which has supplied a large percentage of the flowing completions this year, is partially defined to the East, being the last open trend for expansion.

Jack County: Hill & Hill, Inc.'s Clayton 5-B, Lewis Knight survey, initial deep test for Bryson field, proved dry in Ellenburger at 5370-5435 ft and is cementing pipe to test prospective oil production in Mississippi at 5105-5380 ft.

Wildcat Failures: Sinclair Prairie's Freeman 1, projected Ordovician test in northern Grayson County, abandoned at 2232 ft due to low structural position in topping Stanley shale at 2000 ft. In Throckmorton County, British-American's McCluskey 1-A tested water in Mississippi and Bend, bottomed at 5205 ft. Benson Bros.' Staley 1, 1¼ miles north of Ringgold pool, Montague County, quit in Ellenburger at 5948-6039 ft.

Montague County: Continental's Hildreth 1, 1¾ miles northeast of Gant-Turner pool's single Bend producer, is drilling oil saturated lime at 6562 ft in Viola, topped at 6546 ft, 42 ft high. Recovered small amount free oil when tester used in Bend.

NORTH TEXAS FIELD COMPLETIONS

Archer County: Griffin-Kadane—K. & G. Production Co.'s Griffin-Anderson 1-E, 467 ft from n and 660 ft from w Palo Pinto CSL 11, KMA lime 4083 ft, abnd 4458 ft.

Clay County: Akin—Dimock-Costley's Patrick 3-A, 1625 ft from s and 1350 ft from w blk 82, Byers subdiv, pump 56 bbls, sand 1107-12 ft.

Clay County: Joy—Consolidated Oil Co.'s Scaling 1, 2650 ft from s and 330 ft from e blk 12, H. Williams sur, top Bend 5514 ft, Barnett shale 6107 ft, abnd 6210 ft.

Clay County: Spring—Continental's Spring 3, 374 ft from s and 4764 ft from e H&TC 23, blk 4, top Bend 5606 ft, Ellenburger 6065 ft, abnd 6203 ft.

Cooke County—Joe Baldwin et al's Rubnecht 1, 330 ft out SWc 113-ac tr, T. W. Dickson sur A-309, abnd 2528 ft.

Montague County: Sanders — Sinclair Prairie's Hill 1, 660 ft out SEc blk 115, J. C. Mattison sur A-471, flow 1040 bbls natural 2-in, Bend conglomerate 5955-61 ft.

Wichita County: K-M-A Ellenburger— E. C. Oil Co.'s Mangold 28-E, 615 ft from s and 467 ft from e blk 35, P. Castleman sur, flow 1392 bbls 2-in, acid 3000 gals 4322-60 ft.

E. C. Oil Co.'s Mangold 6-A-E, 615 ft from n and 467 ft from e blk 35, P. Castleman sur, flow 2676 bbls 2-in, acid 3000 gals 4295-4365 ft.

Kadane-Griffith Oil Co.'s Mangold 10-A-E, 701 ft from e and 544 ft from s blk 38, P. Castleman sur, flow 1344 bbls ¾-in, acid 3000 gals 4242-4306 ft.

Sunray Oil Co.'s Mangold 16-E, 410 ft from s and 1055 ft from e of n½ blk 37, P. Castleman sur, flow 1532 bbls 2-in, acid 3000 gals 4278-4344 ft.

Wilbarger County: Harrold—Big Six Oil Co.'s Vermillion-Morris 1, 440 ft from s and 2283 ft from e H&TC 3, blk 14, top lime 3169 ft, pump 180 bbls oil plus 18 bbls water, acid 1000 gals perforations 3262-76 ft, td 3298 ft.

NORTH TEXAS GAS INPUT WELLS

Archer County—Fain-McGaha Oil Corp.'s Ferguson, 25-C, SP 1, A-416, sand 639-51 ft.

Fain-McGaha Oil Corp.'s Ferguson 28-C, SP 1, sand 654-59 ft, td 682 ft.

Wilbarger County—Phillips' Waggoner 222, c sw sw H&TC 45, blk 4, sand 1861-81 ft.

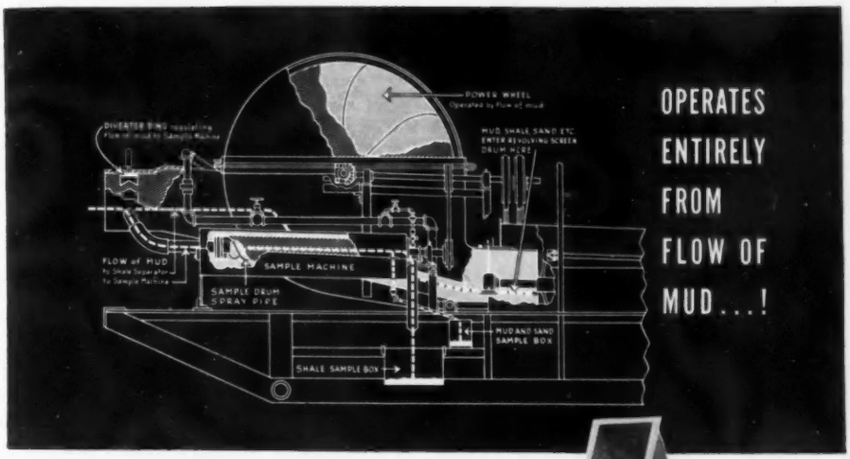
Young County—H. B. Streit et al's Jack 8-A, blk 23, Young CSL sur, sand 550-54 ft, td 569 ft.

NORTH TEXAS WILDCAT COMPLETIONS

Archer County—Cochran & Cain's Cockrell 1, 330 ft from w and 990 ft from s TE&L sec 2450, abnd 1606 ft.

Morgan & Turner's Hamilton 1-A, 2358 from e and 1389 ft from n sec 1, Crawford subdiv of I. Holman sur A-162, abnd 1530 ft.

Baylor County: Discovery — Jordan Pet.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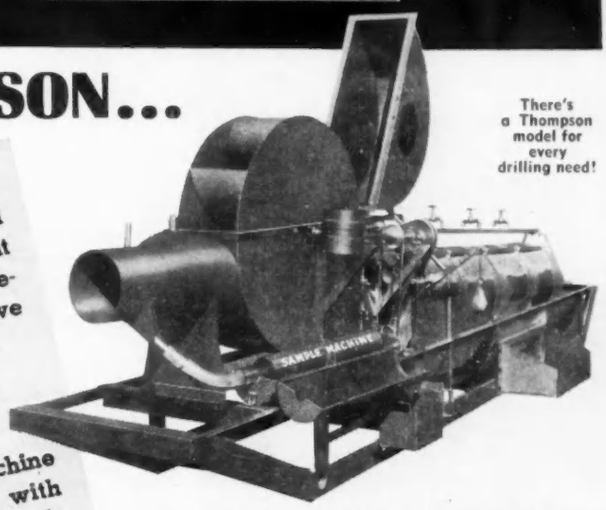

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Co.'s Fayette CSL 1, 511 ft s and 853 ft w of SEc w 750 of n 1500 of 4153-2-ac tr, Fayette CSL sur, elev 1156 ft, top Palo Pinto 3017 ft, pump 90 bbls 37.5-gr oil, 30 bbls water, acid 1000 gals 3017-25 ft.

Cooke County: Failure—Fred Snuggs et al's Lynch 1, 660 ft out NEc W. C. Wharton sur A-1114, abnd 2502 ft.

NORTH TEXAS WILDCAT STARTS

Archer County—L. T. Burns et al's Hasson 1, 990 ft from n and 330 ft from w blk 165, Robt. Carson sur, lcn.

J. R. Craig et al's A. J. Ikard 1, 330 ft from s and 1715 ft from w of 684-ac tr, Joseph Levins sur A-260, sd 1101 ft.

White & Duncan's J. T. Richardson 1, 330 ft from NWc s½ Lot 9, J. Scott sur, A-374, lcn.

Clay County—George Golden & Norwood's Myers 1, 990 ft from nw and 330 ft from sw lines n-50-ac s-100-ac blk 49, Bacon subdiv, E. Story sur A-419, lcn.

W. T. Hutcheson Jr. et al's C. T. Taylor 1, 330 ft from ne and 750 ft from nw blk 38, Bacon subdiv, lcn.

WEST CENTRAL TEXAS FIELD COMPLETIONS

Coleman County—Anderson-Prichard's Coker 1, c ne sw GH&H sec 72, blk 2, top Morris sand 3010 ft, abnd 3625 ft.

Anderson-Prichard's Harris 1, c sw sw GH&H 51, blk 2, Morris sand 3042 ft, Gray sand 3564 ft, abnd 3660 ft.

Comanche County: F. O. Akin et al's Bellamy 1, c w½ ne se H&TC 12, blk 2, top lime 2520 ft, pump 33 bbls oil, plus 17 bbls water, shot 40 qts 2650-64 ft, td 2673 ft.

Jones County—Danciger's Cannon 1, 330 ft out NEc s-80-ac blk 81, DeWitt CSL, leag 126, flow 310 bbls 24/64-in natural, Gunsight lime 2659-64 ft.

Jones-Stasney and Harold Neely's Mashburn 1, 330 ft out SEc s½ blk 86, DeWitt CSL, leag 126, flow 794 bbls 2-in, plus 20 percent water, acid 2000 gals 2423-28 ft.

WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Coleman County: Failure—J. T. Baran et al's Whittington 1, 467 ft out NEc se T&NO sec 4, blk 2, elev 1992 ft, Gardner sand 3360 ft Gray sand 3466 ft, Bend 3595 ft, abnd 3675 ft.

Shackelford County: Failure—W. K. Wood et al's Shackelford Co. 1, nw sw sw B.A. sec 4, abnd 814 ft.

Taylor County: Failures—Fain-McGaha Oil Corp.'s Fulton 1, 780 ft from n and 560 ft from w 164-ac tr in se part T&P 3, blk 18, elev 1894 ft, base Saddle Creek 2603 ft, top Flippin 2621 ft, dry Swastika 3022-34 ft, abnd 3100 ft.

Fain-McGaha's Smith 1, 1497 ft from e and 1823 ft from n 875-ac tr and Jose Gabo sur 128, elev 1721 ft, abnd 2550 ft.

WEST CENTRAL TEXAS WILDCAT START

Shackelford County — Fain - McGaha Oil Corp.'s J. P. Morris 1-B, se se nw ET 167, lcn.

TEXAS PANHANDLE FIELD COMPLETIONS

Gray County—Skelly's Saunders 3-B, H&GN 12, blk A-6, pump 62 bbls, shot 500 qts 2789-2882 ft, td 2921 ft.

Hutchinson County—J. E. Crosbie's Cockrell 9, D&SE 14, blk B-3, pump 168 bbls, shot 460 qts, 2780-2880 ft.

J. M. Huber Corp.'s Weatherly 20, A&B 26, blk Y, pump 296 bbls, natural, lime 2875-93 ft, td 2946 ft.

You may have surplus used equipment that is urgently needed by some other operator.

TRADING POST SECTION

Page 148 of this issue

East Texas

Cherokee Wildcat Has Lower Trinity Saturation

Cherokee County wildcat making test of saturation in Lower Trinity. Series of failures have confined Club Lake pool to comparatively small area. Paluxy pool in Wood County to become most active in district, and added four flowing wells the past week.

Cherokee County: Humble's Curtis 1, first deep test on Larissa prospect, is awaiting drill-stem test after partial recovery of core at 10,165-10,185 ft showed porosity with oil stain and odor from Oolitic lime. Tentative top of Pettit placed at 10,160 ft. This wildcat passed up nominal show near 9800-foot level.

Wood County: Four new wells recorded by Black Oak (Coke) pool extend production east, west and south, and area to take district lead on volume drilling. General American Oil Co.'s Rodney 1, west outpost, flowed 70 bbls per hour natural open 2-in tubing, Paluxy sand perforations at 6320-30 and 6338-60 ft, cased off water 6385-6425 ft, elevation 529 ft. Amerada's Darby 1, between this well and discovery, flowed 25 bbls first hour through ¼-in, then 381 bbls in 6 hours on ½-in, perforations at 6297-6369½ ft, with 102-ft section of Paluxy above water zone at 6383-95 ft, elevation 528 ft, and company is starting direct north and south offsets. Amerada's Kennemer 2, ¼ mile south discovery, flowed 2 bbls heavy oil hourly from perforations at 6360-64 ft, then perforated main pay at 6275-6316 ft, with official gauge pending, and Faulk 1, east outpost and highest on structure, awaiting final gauge after flowing 40 bbls in ½ hour through ½-in, perforations at 6230-6340 ft, with 92 ft net pay zone. More than dozen additional wells scheduled for field, including trio by P. G. Lake et al to northeast in Hopkins County.

Smith County: Two-mile south extension for Chapel Hill field is in prospect since Sinclair Prairie's Swinney 1, Wm. Lockhart Survey, logged top Georgetown 4450 ft, elevation 415 ft, only 87 ft low to nearest producer, a gas-distillate well in Pettit, drilling 4990 ft.

Hunt County: Productive limits of

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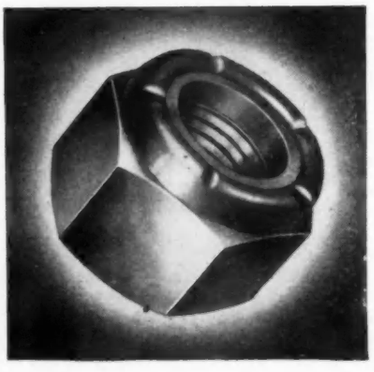

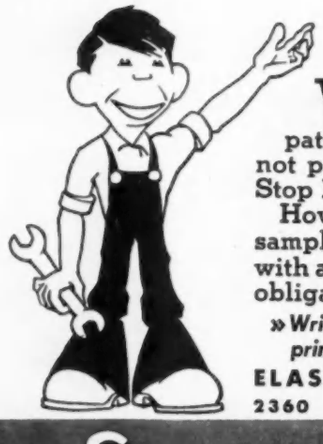

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Club Lake faulted structure greatly restricted through trio of apparent failures to southwest and northeast of three flowing producers on discovery tract, and Paluxy also eliminated as source production. Grelling and Hugus' Graham 1, west of discovery and failure in Woodbine, abandoned in Paluxy 4294-4411 ft. Humble's Aetna Life 1, southwest outpost, tested water at 2823-32 ft and in upper sand perforations at 2773-82 ft in Woodbine, topped at 2774 ft, elevation 495 ft, and Morrison 1 proved dry from 2782-92 ft, elevation 497 ft. Company's Bracken 1, northeast outpost, structurally low and abandoned 2942 ft. Hollandsworth et al's Baker 3, southeast of discovery, flowed 140 bbls initial ¼-in, perforations 2774-90 ft, elevation 498 ft.

Deep Projects: Falcon Co.'s Keitt 1, Navarro County Smackover test, drilling 5220 ft in Travis Peak, topped 4450 ft. In Freestone County, Ohio's Hill 1, coring 5030 ft, base Austin chalk 4699 ft.

Bowie County: Paperson Bowlen of Tyler has taken over A. C. McGahey's acreage in Simms area and turned part interest to Grady Vaughn for 9500-ft Smackover lime wildcat, Simms 1, on 80-acre lease out of 2000-acre tract. Arkansas Fuel Oil Co., Stanolind and Barnsdall will assist.

Cass County: British-American staked location for 7000-ft Travis Peak wildcat, O. W. Lemmon 1, 106-acre tract, Arthur Roberson survey, on 4200-acre block two miles northwest of Lodi and three miles west of Kildare field.

At Kildare, Phillips' Benefield & Singleton 1, Wanhop survey, east side test in two-well field, flowed 81 bbls in 14 hrs on 5/16-in, tp 300, cp 200, perforations in upper Gloyd, 5997 to 6012 ft, and acidized 3000 gallons. Lower Gloyd at 6024-34 ft showed salt water. Total depth is 6062 ft.

EAST TEXAS FIELD COMPLETIONS

Freestone County: Wortham—R. W. Noble et al's Simmons 1, 6-ac lse, R. B. Longbotham sur, abnd 2926 ft.

Hunt County: Club Lake—L. A. Grelling-Don F. Hugus' Graham 1, 1570 ft from n and 330 ft from e 110¾-ac lse, Chas. Hart sur, elev 512 ft, Pecan 1115 ft, Austin 2414 ft, cut fault 2150-75 ft, Woodbine 2898 ft, Georgetown 3485 ft, Paluxy 4394 ft, abnd 4411 ft.

Smith County: Chapel Hill — Sinclair Prairie's O'Neal 1, 1010 ft from s and 477 ft from e of 100.87-ac lse, J. S. McDonald sur, elev 456 ft, flow 425 bbls ¼-in, acid 4000 gals upper Pettit 8158-90 ft, td 8389 ft.

Wood County: Hawkins—Humble's Bryan 2, 467 ft from s and 517 ft from w of 113.46-ac lse, W. Parker sur, flow 388 bbls ¼-in, Woodbine perf 4761-68; 4783-89; 4794-4800 ft, td 4855 ft.

Humble's Kirkpatrick 1-A, 1015 ft from s and 1500 ft from w H. E. Watson sur, flow 396 bbls ¼-in, perf 4491-99 ft, td 4595 ft.

Humble's Palmer 1-B, E. Wideman sur, flow 340 bbls ¼-in, perf 4756-66 and 4820-23 ft, td 4871 ft.

Stanolind's Christian Board 4, S. Castleberry sur, jkd 1645 ft.

EAST TEXAS WILDCAT COMPLETIONS

Hunt County: Failure—F. D. Prince and E. B. Germany's Miller 1, 660 ft out SWc 160-ac lse, C.C.I. Co. Sur A-1203, elev 492 ft, Pecan 1102 ft, base Austin 2376 ft, cut fault between 2150-75 ft, top Woodbine and water 2899 ft, abnd 3004 ft.

Navarro County: Gas Discovery—John W. Hoosier et al's Black 1, 800 ft from se and 150 ft from ne lines 40-ac tr, B. G. Balthrope sur, elev 378 ft, Pecan 1995-2057 ft, Austin 2710-3043 ft, cut fault and 15 degrees off vertical, Woodbine 3153 ft, initial 37,000,000 ft gas open flow, perf 3234-52 ft.

Trinity County: Failure—Pan - American's (was British-American) Texas Long Leaf 1, 660 ft out NEc blk 20, J. Ceballo sur, Wilcox 2380-6400 ft, abnd 6510 ft.

EAST TEXAS WILDCAT STARTS

Cherokee County—Magnolia's Braly 1, 101.86-ac lse, out 409½-ac tr, Josiah Thomas sur, ½ mi e Mixon lcn 9000-ft test.

McLennan County—C. D. Neff et al's E. B. Smith 1, 660 ft out nw corner W. F. Chapman sur, lcn.

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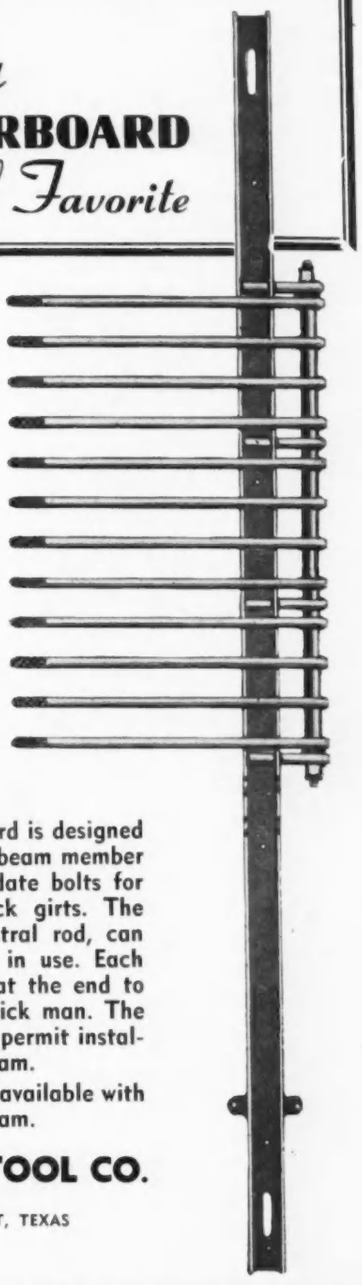

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Southwest Texas

Jackson County Wildcat Developments Spurt

Jackson County definitely becomes the hot spot of Southwest Texas activity as a new surge of wildcatting brought five more tests in the county during the week. At the same time, 14 new locations were reported in the new area west of the Ganado field opened by the discovery of Marginulina production in a producer two miles from that area.

W. S. Boyle was running gauge in Rose & Sample 1, 2 miles west of Ganado, after perforations in sand at 4987-95 ft.

Gulfboard Oil Corp.'s test midway between the Mayo, Harmon, Ganado, West Mauritz and Mauritz fields, perforated at 5324-35 ft and flowed at the rate of 12 bbls of pipe line oil per hour through 5/32-in choke.

A combination of wildcatting and field development in this county should keep its rigs at the same active pace as during the first half of the year.

Duval County was due to get a boost in work as a result of outpost exploration in the Sejita field. This oil-distillate area's work has been tied up awaiting field rules concerning priorities. These have been held up due to the fact that the gas cap produces distillate and the flanks oil.

The other region of considerable interest is the Seeligson sector, where a series of wildcats and outposts are attempting to close in the non-producing gas between the Seeligson-Blucher-La-Gloria fields.

Quintana Petroleum Co.'s South Texas 1, 6000 ft west of the Washburn field LaSalle County, is bottomed at 5680 ft. It is testing through perforations in 4800- and 5100-ft sands, being completed as a dual-sand producer. It is making gas from the upper level and oil from the lower. This is an extension to the Wilcox reserve.

LOWER TEXAS GULF COAST FIELD COMPLETIONS

Jackson County: N. LaWard—Gulf's Four Way-Johnson 1, blk 121, 11.03 bbls 26.9-gr, 5/32-in, 0-50 lbs tp, 1400 lbs cp, gas/oil ratio negligible, perf 5202-07 ft & 5212-15 ft, td 5222 ft.

Jim Wells County: Orange Grove—Smith & Mosser's Diersing 1, sur 112, 20,000 000 gas, 1800 lbs rp, sand 3292, 5½-in 3308 ft, td 3320 ft.

San Patricio County: Midway—F. M. Boynkin's Boynkin & Reed 1, 300 bbls 37-gr, 11/64-in, 800 lbs tp, 1100 lbs cp, gas/oil ratio 1200/1, perf 6080 ft, td 6130 ft.

San Patricio County: Odem—Sam E. Wilson's Lane 2, blk 17-A, taken over by Republic Nat'l Gas Co., 1,500,000 gas ½-in, 1220 lbs tp, perf 3512-30 ft, td 6912 ft.

LOWER GULF COAST WILDCAT COMPLETIONS

Bee County: Failure—Achning & Daubert's E. Kinkler 1, sur 1, 7 mi sw Beeville, abnd 4508 ft.

Hidalgo County: Failure — Seaboard Oil Corp.'s Boston-Texas 1, Los Gauges gr, 5 mi w McCook, abnd 6770 ft.

San Patricio County: Failure—Humble's A. Kastner 1, sec 36, 6 mi n Edroy, abnd 6520 ft.

San Patricio County: Failure—Kirby Pet. Co.'s Jones 1, sec 37, 1½ mi e Plymouth field, abnd 6010 ft.

LOWER TEXAS COAST WILDCAT STARTS

Bee County: Rowe & McBride's Delaney 1, 660 ft se & sw lines 310.25-ac lse, J. T. Malley sur, 4700-ft test.

Jackson County—J. A. Gray & John G. Mayo's Flourney 1, 660 ft ne and nw lines 550-ac lse, J. S. Pierre sur 21, 4 mi ne Morales, 4750-ft test.

Gray & Mayo's Hall 1, 660 ft se, 3000 ft ne lines 543-ac tr, F. G. Keller sur, 3 mi nw Navidad gas field, 4750-ft test.

Gray & Mayo's Williams 1, 2000 ft ne, 660 ft nw lines 500-ac tr, Wm. Whitaker sur, 6 mi ne Navidad, 4750-ft test.

Navarro's Koop 1, 536 ft nw, 851 ft sw lines nw 15, 3 mi n Navidad, 6500-ft test.

J. O. Nelson's L. Ranch 1, 660 ft s and e lines blk 25, I&GN sur ab 154, 7000-ft test.

SOUTHWEST TEXAS FIELD COMPLETION

Starr County: Sun—Sun's C. L. de Garza 6, sh 11, Colorado gr, outpost, abnd 4639 ft.

SOUTHWEST TEXAS WILDCAT COMPLETIONS

Duval County: Failure—H. Coquat's Southland 4-C, sec 1, 3 mi nw Southland field, abnd 5170 ft.

Starr County: Failure—Sun's M. Lozanp 1, sh 86, por 95, 12 mi se Rio Grande City, abnd 4800 ft.

SOUTHWEST TEXAS WILDCAT STARTS

Duval County—Newman Bros.' G. Geurra 1, 660 ft s and e lines w 500-ac sur 146, 1 mi w Kohler fld, 4500-ft test.

Taylor Ref Co.'s E. E. Cardena 1, 660 ft s, 1478 ft e lines BS&F 303, 5 mi w San Diego, 5500-ft test.

Starr County—Sun's Guerra 1, 4000 ft w, 660 ft w lines 3127.67-ac lse, sec 924, 6000-ft test.

SOUTH CENTRAL TEXAS WILDCAT START

Atascosa County—J. A. Hardcastle's Kingley 1, 1000 ft e, 2000 ft s line 457-ac tr, N. McAda sur No. 1550, 1 mi w Pleasanton, 2000-ft test.

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Texas Gulf Coast

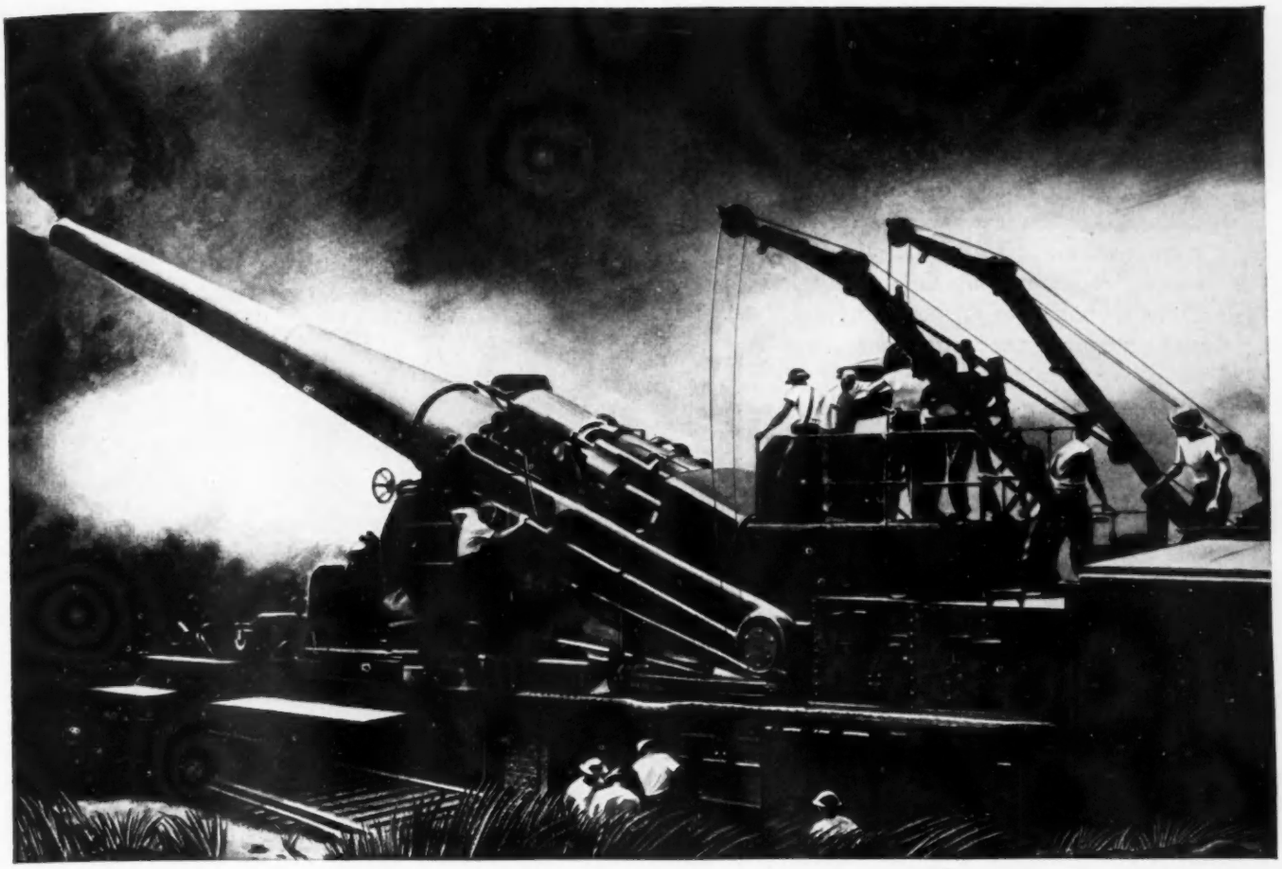
Deepest Well in Texas Projected at Old Ocean

Deepest well in Texas projected at Old Ocean in Brazoria County. New test is made on gas wells in Wharton County. Production tests continued in Matagorda County discovery.

Deep Test: The deepest test ever projected in Texas has been staked by Harrison & Abercrombie at Old Ocean, Brazoria County, to drill to 14,000 ft into the lower Frio sand sections, believed to extend even deeper than the projected depth. McDonald 1-B is to be 600 ft out of the west corner of a 333-acre tract in Battle-Beery and Williams survey, a mile northwest of production and two miles west of Sweeney townsite. Drilling is scheduled to start in a month, but it was said it might be two or more years before it is finished.

Wharton County: Temple Hargrove has squeezed perforations and will test higher in Hartman 1, Lakeview area, which flowed gas from 3876-81 ft. The well produced an unestimated amount of gas with 1350 pounds pressure on tubing and 1600 pounds on casing. Previous tests on this prospect found gas and a little oil.

Matagorda County: Ohio Oil Co. continues to test McDonald 1, Frio sand discovery in North Bay City area. One test at 8406-08 ft flowed 189 barrels through ⅛-in, with 2600 pounds pressure on tubing and 3150 pounds on casing. First test in this sand section at 8404-06 ft flowed 196 barrels through



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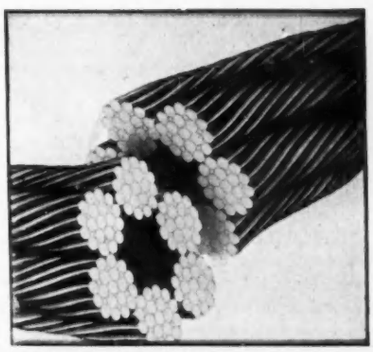

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⅛-in. Three sand sections were cored in this well, all corresponding with Markham and North Markham.

Wildcats Abandoned: Humble has quit Houston Farms 2, Rattlesnake Mound area, Brazoria County, at 7501 ft. Pan American Production Co abandoned Settegast 1 on southwest flank Pierce Junction, Harris County. After recovering mud and water on drill-stem test at 6430 ft; bottom 7505 ft.

J. A. Gray ran electric log to 7512 ft in Goldsmith 1, Barker area, Harris County and abandoned. American Republics and Houston Oil failed to find sand in Hampton 2, second test at Hampton, Hardin County. The well was ¼ mile southwest of the discovery producer. Arkansas Fuel found no shows in Jackson 1, Jackson ranch area of Chambers County, and abandoned at 9610 ft.

New Operations: Stanolind is preparing to drill Fitzhugh 4, another test on west flank of Big Hill dome in Jefferson County. So far operators have found no gas in the flank sands. Location is on 356-acre tract in Patrick subdivision.

Wilcox Test: George W. Strake has staked Jones 1, 8500-ft Wilcox test three miles west of Willis in Montgomery County. It is on 50-acre tract in Timothy Cude league. The prospect has had several shallow Cockfield tests, some finding oil shows. Union Oil Co. is a large leaseholder in the area and is supporting the test.

TEXAS GULF COAST FIELD COMPLETIONS

Hardin County: Hampton—American Republics & Houston Oil's Hampton Fee 2, Hampton 36.48-ac tr, abnd 7018 ft.

Waller County: Katy — Stanolind's Bourdette 1, 1320 ft fr s & el 480-ac tr HTC 109, 7-in 7414 ft, perf 7192-7224 ft, 200,000,000 gas, td 7415 ft.

TEXAS GULF COAST WILDCAT COMPLETIONS

Fort Bend County: Failure—Magnolia & Placid's Huntington 2, 660 ft fr n & wl 500-ac tr, Henry Scott sur, tested several sands, abnd 8903 ft.

Trinity County: Friday Area, Failure—Pan American's Texas Long Leaf 1, 1000-ac tr, J. Caballos sur, abnd 6510 ft.

Trinity County: Glendale Area, Failure—Magnolia's Cameron Est. 1, 6000-ac tr, Henry Bond sur, set 5½-in 5835 ft, tested two levels, abnd 5766 ft.

TEXAS GULF COAST WILDCAT STARTS

Jefferson County—Hebert & Smith and Dishman & Lucas' Deaton 1, between Fanette and LaBelle, 515-ac tr, J. W. Denny sur, lcn 8500-ft test.

San Jacinto County—John G. Mayo's Smith 1, Urbana area, 660 ft fr n & wl 243-ac tr, J. T. Simpson sur, A-49, lcn Wilcox test.

Tyler County—Dishman & Lucas' Angelina 1, 100-ac tr Benjamin Burke sur, lcn 5600-ft Wilcox test.

Louisiana Gulf Coast

Deeper Sands Opened In Three More Fields

Naylor opens Marginulina sand production at West Mermentau. Stanolind completes new discovery on north flank Anse la Butte. Well flows from new sand in University field.

Jefferson Davis Parish: H. M. Naylor Oil Co. has opened oil production in Marginulina at West Mermentau with Acadia Development 2 from perforations at 10,198-206 ft. The well flowed 243 barrels through ⅛-in choke with 4100 pounds pressure on tubing, casing sealed, shut-in pressure 5600 pounds. It found eight sands, all higher than in the discovery well, completed in May, 1941, making gas and distillate.

Gravity of the oil is 45.7. The sand record is as follows: 9089 ft, 9220 ft, 9440 ft, 9560 ft, 9658 ft, 9707 ft, 9985 ft, and the pay sand at 10,198-206 ft. Location of the new well is 1600 ft southwest of the discovery in 12-10s-2w. Hole is bottomed at 10,581 ft. Naylor has 4463 acres around the field.

Lafayette Parish: Stanolind has opened deep production on noth flank at Anse la Butte with Nickerson 1 on the St. Cyr plantation. The producer, from Oligocene, flowed 25.84 bbls of 30.7-gr oil through 9/64-in choke. Perforations were made at 9782-9818 ft in top of a broken sand section. Sands were found from 9782 ft to 9868 ft. Tubing pressure was 1640 pounds, casing 1740 pounds, gas-oil ratio 774-1. This dome has been inactive on flanks since W. R. Davis opened production in 1940 on Voorhies acreage on south flank. Shallow wells produce from on top of a large salt dome.

East Baton Rouge Parish: William Helis has completed a new sand discovery in University field, Duplantier 9, 65-7s-1w. Perforated at 9720-24 ft after setting 7-in at 9080 ft, the well flowed 129 bbls through ⅛-in with 3100 pounds on tubing, casing sealed. Total depth is 10,190 ft.

Iberia Parish: Humble has cleaned up fishing job and is reaming to go ahead in Petit Anse 2, now bottomed at 9242 ft. Located on southwest flank of Avery Island dome. Reports credit this wildcat with having sufficient sand section above 9000 ft to make a commercial producer.

Wildcats: Amerada has made location for Angellos 1, Rosedale prospect, Iberville Parish, east of Congo Oil Co.'s Dreyfuss 1 10,024-ft dry hole and Humble's Iberville Loan 1, a 10,025-ft dry hole. Amerada has 4000 acres.

Humble has projected Gaylord Container 1, 7500-ft wildcat on Bogalusa prospect, Washington Parish. Is in eastern portion of parish in 25-2s-12e.

Gulf has staked its third location on Bayou Couba prospect in St. Charles Parish. All three wells are in 13-15s-21e and will be drilled to 7500 ft. The company has conducted considerable geophysical work in the area.

SOUTH LOUISIANA FIELD COMPLETIONS

Cameron Parish: Black Bayou — Shell's Watkins 52, 2045 ft s of nw cor sec 7 alg wl falling on common line of secs 7 & 12-12s-12w, 5½-in 7906 ft, perf 7785-7810 ft, 308 bbls 36.9-gr, 10/64-in, tp 1300, cp 1350, td 8017 ft.

Evangeline Parish: Ville Platte—Continental's Haas 7-D, begin w cor M. Haas 400-ac tr, go ne 3993 ft alg nwl, th 600 ft e at ra in 44-3s-2e, perf 10,116-152 ft, 6-in 10,207 ft, 150 bbls 16/64-in, td 10,207 ft.

Iberia Parish: Fausse Point—Sun's Kling-Walet 10, sw nw 27-11s-8e, abnd 9073 ft.

Plaquemines Parish: Venice—Tide Water's Buras Levee 16, 2068 ft n & 710 ft w of se cor 28-21s-30e, 5½-in 11,271 ft, perf 10,750-800 ft 267 bbls, 36.5-gr, 9/64-in, td 11,500 ft.

St. Mary Parish: Paradis—Humble's Manufacturers Record 2, 39-14s-20e, perf 9656-66 ft, 28 bbls dist, ¼-in, td 10,984 ft.

Terrebonne Parish: Bay St. Elaine—Texas Co.'s Terrebonne Parish School Board 5, 1403 ft s & 442 ft e of nw cor 16-22s-18e, abnd 8838 ft.

SOUTH LOUISIANA WILDCAT COMPLETIONS

East Baton Rouge Parish: University—William Helis' Duplantier 9-A, 1000 ft n 81 deg 48 min w, th 1050 s 8 deg 12 mins e at ra fr ne cor 67-7s-1w, 7-in 9080 ft, perf 9720-24 ft, 129 bbls, ⅛-in, td 10,190 ft. Opens new deeper sand.

SOUTH LOUISIANA WILDCAT STARTS

Washington Parish—Humble's Gaylord 1, Bogalusa area, 2052 ft e & 3169 ft n sw c 25-2s-12e, lcn, 7500-ft test.

Iberville Parish—Amerada's Agnellos 1, n 51 deg 34 mins e for 1000 ft, th s 38 deg 26 mins e for 480 ft in 41-7s-10e, lcn.

North Louisiana

Shreveport Outpost Has Salt Water Flow

Shreveport field outpost has salt water on first test. Two more locations at Lake St. John field, Concordia Parish. Deep test drills ahead in gas-distillate area north of Lisbon, Claiborne Parish. Two more wells flow at Haynesville.

Caddo Parish: Near Shreveport airport, Bering Oil Co.'s Noel Estate Unit 1, No. 2, 25-18-14, northeast outpost in the Shreveport field, tested 95 percent salt water from Pettit lime at 5565 ft, showing only small amounts of oil and gas, thus dampening a play in this spot which had led to the drilling of one additional well and staking of three locations.

Concordia Parish: California Co.-Carter Oil Co. staked Louisiana State Lease 476-1, Section 15-9n-10e; and California located Applegate 1, Section 14-9n-10e. Three wells are flowing production from the third being reported as much better than the first two; and a fourth well is drilling.

Claiborne Parish: Union Producing Co.'s Meadows B-1, Section 13-21n-5w, is drilling at 10,420 ft in lime after a drill-stem test indicated a gas-distillate producer from the Smackover lime at 10,226-066 ft.

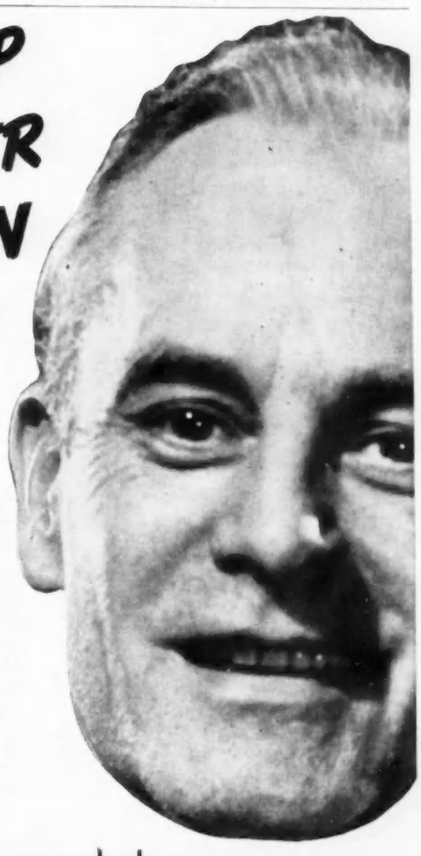
NORTH LOUISIANA FIELD COMPLETIONS

LaSalle Parish: Hemphill—Placid's Graham Unit 2, 40-7n-3e, 165 bbls.

LaSalle Parish: Nebo—H. L. Hunt's Goodpine F-97, 39-7n-3e, 164 bbls.

Claiborne Parish: Haynesville—J. B. White

"HOW TO STOP BOTTOM WATER SABOTAGE-IN A HURRY!"



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and V. A. Hughes' Bond 1, nw 21-23n-8w, flow 37 bbls hr, ¼-in, cp 675, tp 240, acidized 3000 gals, perf Pettit lime, 5361-69 ft, 5394 to 5402 ft, 5416-27 ft, td 5498 ft.

Phillips' Waller 1, ne ne 14-23n-8w, flow 77 bbls 10 hours, 15/64-in, cp 1050, tp 475, perf Pettit lime, 5254-78, 144 shots, acidized 4000 gals, td 5335 ft.

Bossier Parish: Sligo — Triangle Drilling Co.'s Thigpen-Herold B-5, 19-17n-11w, pump 49 bbls, 3172 ft.

NORTH LOUISIANA WILDCAT COMPLETION

Bienville Parish—C. M. Bagley's Bagley-Duncan 1, se cor 4-18n-7w, abnd 2795 ft.

NORTH LOUISIANA WILDCAT STARTS

LaSalle Parish—Peterson Petroleum Corp.'s Drewett Unit No. 1-A, n 44 deg 13 mins e 3429.52 ft from sw cor sec 6 thence e 657.9 ft to loc in 6-8n-4e.

Caddo Parish—H. C. Owens' Wilkerson 1, ne ne 34-23n-15w, moving in.

ARKANSAS FIELD COMPLETION

Union County: New London — Marine Oil Co.'s Frost 2, c sw ne 13-18-12, flow 19 bbls hr, 5760 ft, 200 pounds tubing pressure; third well for field.

ARKANSAS WILDCAT COMPLETION

Union County — Lion Oil Refining Co.'s Lecroy 1, c se nw 36-17-16, Smackover porosity 6408 ft, had doubtful heavy asphaltic oil show 6408-12 ft; DST recovered only mud cut with salt water from 6404-18 ft, abnd 6500 ft.

MISSISSIPPI WILDCAT COMPLETION

Warren County—Roy Lee, Tr's, Anderson-Tulley 1, nw ne 36-18n-4e, elev 312 ft, Sparta 1704 ft, Wilcox 3257 ft, gas rock 6516 ft, lower Selma 6552 ft, abnd 6953 ft.

Michigan Hearing Set

A hearing to review dual-zone completions, repressuring and proration has been recommended by the State Oil Advisory Board. P. J. Hoffmaster, supervisor of wells, set a tentative date of August 3 for the hearing.

Harold McClure, board chairman, announced that unless a major change, which is unexpected on the basis of advance information, in OPC allowable in Michigan, current proration schedules will be continued through August.

California

Shallow Well Indicated Near South Belridge

Shallow discovery indicated in Kern County. Buena Park semi-wildcat project in Los Angeles County abandoned while new test slated for area northwest of Aliso Canyon. Further exploration slated for Pixley area in Tulare County.

Kern County: After logging five sands in 186-ft interval from 896 ft to bottom at 1097 ft, E. A. Parkford's semi-wildcat in 12-29-21, South Belridge area is credited with giving promise of a new shallow discovery.

Los Angeles County: The Texas Co. has abandoned Buena Park Unit 1 semi-wildcat in 6-4-10, Buena Park area, after formation tests showed salt water and mud from four different intervals, last of which was from 8050-8035 ft. Last test showed gas but recovery consisted of all salt water. Company's Buena Park No. 4-E-1, 36-3-11 has been cored to 10,041 ft in sand and shale and has casing on rack.

Location has been graded by Western Gulf Oil Co. and water lines are being laid for a test in the Las Llajas area, 13-3-17, three miles northwest of Aliso Canyon and two miles southwest of Towslev Canyon. Test is to be known as Bradley Estate 1.

Tulare County: Continental is preparing to drill another test well in the Pixley area, Reynolds 1, and southeast of the Pixley Community 1 test abandoned by the company in April this year after encountering basement at 7891 ft.

CALIFORNIA FIELD COMPLETIONS

Kern County: Belridge North—Belridge Oil Co.'s 31-R-28, 2240 ft s, 909 w ne cor 28-27-20, pump 144 bbls 32-gr, 82 ft perf 8794 ft, Top "R" zone sand 8405 ft, pd 8802 ft, td 9133 ft.

Kern County: Belridge South—Belridge Oil Co.'s 47A-33, 922 ft n, 2392 e sw cor 33-28-21, pump 50 bbls 15-gr, perf 415-792 ft, td 792 ft.

General's Belridge 3-9, 1247 ft s, 233 e nw cor 3-29-21, pump 58 bbls 16.5-gr, perf 625-755, 778-901, 935-1006 ft, td 1019 ft.

Kern County: Buena Vista Hills—Standard's 89-35-B, 2100 ft s, 2040 e nw cor 35-31-23, pump 224 bbls, perf 2655-2696, 2756-2786, 2966-3081, 3290-3330 ft; Scalez 2733 ft, Gusher 2977 ft, Wilhelm 2897 ft, td 3333 ft.

Kern County: Coles Levee—Richfield's KCL-C-41-34, 360 ft s, 2307 e nw cor 34-30-25, flow 1686 bbls 34.1-gr, 2-1½ in, 250/0 lbs, 175 ft perf 9191 ft, td 8198 ft.

Kern County: Midway-Sunset—C. C. M. O. Co.'s Midway 29-26, ne 26-31-22, pump 13 bbls 19.1-gr, 187 ft perf 2089 ft, td 3590 ft.

Texas' Fee 103, 465 ft n, 1072 e w¼ cor 36-31-22, pump 22 bbls 17.4-gr 253 ft perf 1442 ft, td 1485 ft.

Kern County: Mount Poso—C. C. M. O. Co.'s Mon 5, 1300 ft s, 2295 e nw cor 26-27-28, pump 97 bbls 15.1-gr, 28 ft perf 1936 ft, td 1936 ft.

Union's S&M 33, 1650 ft s, 451 e w¼ cor 4-27-28, pumped 32 bbls 15.9-gr, 71 ft perf 1552 ft, td 1552 ft.

Orange County: Huntington Beach—Southwest Exploration Co.'s State 53, 190 ft n, 3270 w c/l 23rd and Ocean, pump 175 bbls 24.4-gr, 702 ft perf 5620 ft, td 5620 ft.

Ventura County: Piru—Pacific Western Oil Corp.'s 4-4-18, pump 250 bbls 20.8-gr, perf 2592-2936, 3073-3161 ft, td 3161 ft.

CALIFORNIA WILDCAT COMPLETIONS

San Benito County: Ciervo Area: Failure—Superior's Reay 1, 1500 ft n, 330 e sw cor 35-16-11, Eocene 3074 ft, abnd 3893 ft.

Tulare County: Oakland Colony Area: Failure—Richfield's Churchill 1, 334 ft s, 327 ft e nw cor 35-20-24, abnd 5485 ft.

CALIFORNIA WILDCAT STARTS

Fresno County—Standard's No. 82-29 F, 29-20-16, Guijarral Hills area, lcn.

Fresno County—Richfield's Burns 1, 30-13-17, Kerman area, lcn.

Kern County—Dolley & Dougan's Sesnon 1, 17-28-27, Poso Creek area, lcn.

Los Angeles County—Western Gulf's Brady Estate 1, 13-3-17, Las Llajas area, lcn.

Ventura County—Royalty Service Corp.'s Leonard 1, 19-2-22, Oxnard area, lcn.

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Michigan

Deep Monroe Cores Lend Encouragement

Deep Monroe lime horizon gains interest by outpost in Clare County as Lake County wildcat 9 miles northwest Reed City pool gets favorable report from cores.

Headquarters: E. V. Hilliard's Pinch 1, 10-20n-3w, mile south of developed Traverse lime (3400-ft.) production and 2½ miles southeast of only deep well in field, carried 2500 ft oil in 4 days from Monroe lime at 4968 ft. Drilling halted to wait storage tanks.

Reed City: Ohio Oil Co.'s Consumers 1, N½ NE SE 36-19n-12w, South Newkirk Township, Lake County, logged Dundee lime at 3487 ft, coring three high porosity zones with one pay showing some saturation. Drilling has been carried to 3712 ft. Company plans to set casing at 3483 ft for drill-stem test. Well is nine miles northwest Reed City pool where chief production comes from Monroe lime at 3500-3600 ft.

MICHIGAN FIELD COMPLETIONS

Allegan County: Hopkins—C. A. Perry's Schrader 1, w½ nw nw 17-3n-12w, Traverse lime 1570 ft, abnd 1608 ft.

Allegan County: Trowbridge—Alan Winchester's Russell 1, ne sw se 30-1n-13w, Traverse lime, pump 65 bbls, 1331 ft.

Clare County: Winterfield—Taggart Bros. Co.'s Liquidation 1, c nw 6-20n-6w, Stray sand, 5,100,000 gas, 1328 ft.

Osceola County: Winterfield—Taggart Bros. Co.'s Reber 109, c nw 36-20n-7w, Stray sand, 17,700,000 gas, 1338 ft.

Osceola County: Reed City—Ohio's Patterson 2, n½ ne se 5-17n-10w, Monroe lime, flow 90 bbls 3 hrs, 3547 ft.

Ottawa County: West Tallmadge—Smith Pet Co.'s Wisniewski A1, se sw 27-8n-13w, Berea sand, 3,210,000 gas, 1163 ft.

Ottawa County: Wright—G. C. Gerrard's Beckwith 1, se sw sw 32-8n-13w, Berea sand, pump 97 bbls, 1163 ft.

Roscommon County—Ohio's Basse 1, n½ ne nw 20-24n-1w, Monroe, abnd 4440 ft.

MICHIGAN WILDCAT COMPLETIONS

Lake County: Failure—E. Bennight's Lee 1, n½ sw sw 5-17n-11w, Monroe 3611 ft, abnd 3648 ft.

Mecosta County: Failure—C. W. Teater's Wood 1, n½ nw ne 2-15n-7w, Dundee 3802 ft, Monroe 3870 ft, abnd 3949 ft.

Montcalm County: Failure—Chapman Oil Co.'s Frazee 1, s½ se se 22-10n-6w, abnd 1084 ft.

Newaygo County: Failure—Hubbell Oil Co.'s Britten 1, s½ se sw 23-16n-12w, Monroe 3415 ft, abnd 3569 ft.

MICHIGAN WILDCAT START

Mason County—C. W. Teater's Pipe 1, s½ se sw 18-17n-18w, dr.

Eastern States

NEW YORK COMPLETIONS

Allegany County — Bradley Prod. Corp.'s Nobles farm, Alma, 8 bbls, Richburg, 1329 ft.
Trio Oil Co.'s Big Four farm, Bolivar, 15 bbls, Richburg, 1388 ft.
South Bolivar Oil Co.'s McKelvey farm, Bolivar, 9 bbls, Richburg, 1355 ft.
Conkling & Reeland's Swarthout farm, Bolivar, 18 bbls, Richburg, 1439 ft.
A. L. Shaner's Parker farm, Bolivar, 6 bbls, Richburg, 1367 ft.
Star Oil Co.'s Neff farm, Wirt, 9 bbls, Richburg, 1377 ft.
Helen Randall's Pike farm, Alma, 17 bbls, Richburg, 1432 ft.
Messer Oil Co.'s Merritt farm, Alma, 10 bbls, Richburg, 1410 ft.
Otsquago Co.'s Pike farm, Alma, 7 bbls, Richburg, 1449 ft.
J. F. McBrice's Duke farm, Bolivar, 7 bbls, Richburg, 1347 ft.
Bradley Prod. Corp.'s Crandall farm, Scio, 9 bbls, Richburg, 1329 ft.
Bradley Bros.' Sawyer farm, Bolivar, 10 bbls, Richburg, 1418 ft.
Marsh Oil Co.'s Fay farm, Bolivar, 12 bbls, Richburg, 1440 ft.
Max Andrews' Burdick farm, Wirt, 6 bbls, Richburg, 1382 ft.
Cam Oil Co.'s Peavy farm, Genesee, 7 bbls, Richburg, 1380 ft.
I. & H. Oil Co.'s Peterson farm, Wirt, 7 bbls, Richburg, 1410 ft.
Sloan & Zook's Green farm, Genesee, 10 bbls, Richburg, 1382 ft.

NEW YORK INPUT WELLS

Allegany County—South Bolivar Oil Co.'s McKelvey farm, Bolivar, Richburg, 1352 ft.
Messer Oil Co.'s Keller-Scott farm, Wirt, Richburg, 1143 ft.
Messer Oil Co.'s Merritt farm, Alma, Richburg, 1380 ft.
Messer Oil Co.'s Merritt farm, Alma, Richburg, 1366 ft.
Messer Oil Co.'s Merritt farm, Alma, Richburg, 1349 ft.
Bradley Prod Corp.'s Rolls farm, Richburg, 1337 ft.
J. P. Herrick's No. 1, Howe farm, Bolivar, Richburg, 1415 ft.
L. H. Thornton et al's Fassett farm, Willing, Richburg, 1288 ft.
E. M. Hill Est.'s Hill farm, Genesee; Richburg, 1367 ft.
Sawnett Oil Co.'s Merritt farm, Genesee; Richburg, 1447 ft.
Wightman & Conkling's Wetherby farm, Clarksville, Richburg, 1412 ft.

OHIO COMPLETIONS

Ashland County—Ohio Fuel's Mosher 1, abnd 2954 ft.

Athens County—H. B. Walker's Taylor 1, 3 bbls & 0.1 gas, 1805 ft.

Coshocton County—Ohio Fuel's Holt 1, 0.43 gas, 3321 ft.

Guernsey County—M. J. Purdy's Christman 1, 1.0 gas, 1006 ft.

Holmes County—Johnson Co.'s Horn 1, 0.28 gas, 2926 ft.

Knox County—Upham Gas Co.'s Fry 1, 2.04 gas, 2765 ft.
Knox Exploration Co.'s Fry 1, 2.0 gas, 2765 ft.

Licking County—Ohio Fuel's Maharg 1, 0.16 gas, 2675 ft.

Loraine County—R. C. Cain's Zalka 1, abnd 2256 ft.

Meigs County—Mathews Oil Co.'s Souders' 1, abnd 936 ft
Ohio Fuel's Sedlie 1, 0.54 gas, 729 ft.

Monroe County—William Payne's Ganoe 1, abnd 2194 ft.

Morgan County—Jessie Newton's Mills 1, abnd 1055 ft.
Swingle et al's Weaver 2, 0.18 gas, 1120 ft.

[*Continued on Next Page*]

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OHIO—Continued

Muskingum County—Atha Realty Co.'s Corbin Heirs 1, 0.07 gas, 4026 ft.
Ohio Fuel Gas Co.'s Kirkbridge 1, 0.56 gas, 4008 ft.
Perry County—Ohio Oil Co.'s Latta 1, abnd 3327 ft.
Ohio's Sunday Creek Coal Co. 211, 0.16 gas, 991 ft.
Ohio's Dugan 1, abnd 3327 ft.
Palm Oil Co.'s Lyons 6, 70 bbls, 3351 ft.
Vinton County—Ohio Fuel's Armstrong 1, 1.31 gas, 2391 ft.
Washington County—G. F. Warren's Fee 9, 2 bbls, 310 ft.
Wayne County—Ohio Fuel's Wile 2, abnd 3310 ft.

PENNSYLVANIA COMPLETIONS

Armstrong County—Bashford et al's Cribbs 1, 0.13 gas, 1678 ft.
J. K. Sharp's Henry 1, 0.21 gas, 1303 ft.
Clarion County—United Natural Gas' Hartman 1, 0.03 gas, 2800 ft.
Indiana County—F. W. Phillips Gas & Oil's Kunkle 1, abnd 1724 ft.
Westmoreland County — People's Natural Gas Co.'s Wohlwend 1, 0.05 gas, 3714 ft.

OLD WELL DRILLED DEEPER

Armstrong County — Equitable Gas Co.'s Runyan 1387, 0.03 gas, 3350 ft.

WEST VIRGINIA COMPLETIONS

Boone County — Owens-Libby-Owens' Pull Creek 636, 0.02 gas, 4530 ft.
Braxton County—Pittsburgh & W. Va.'s Mick 7880, 0.11 gas, 2196 ft.
Calhoun County—Hope Nat. Gas Co.'s McDonald 3735, 15 bbls, 2113 ft.
Virginian Gasoline & Oil Corp.'s Elliott 1321, 5 bbls, 2135 ft.
Clay County—Pitts. & W. Va. Gas Co.'s Elk River Coal & Lumber Co. 7852, 0.33 gas, 2135 ft.
W. A. Bickerstaff's Reed 1, 0.03 gas, 2200 ft.
Gilmer County—Pitts. & W. Va. Gas Co.'s Sleeth 7860, abnd 1724 ft.
Osborn Gas Co.'s Osborn 1, abnd 1490 ft.
Jackson County — Columbian Carbon Co.'s Winter 1, 11.48 gas, 5141 ft.
United Carbon Co.'s Castro 1048, 3.83 gas, 5062 ft.
Boggass Dr. Co.'s Nunzum 1, abnd 2770 ft.
Columbian Carbon Co.'s Boice 1, 1.30 gas, 5077 ft.
Columbian's Shinn 2, 8.42 gas, 5007 ft.
Kanawha County—United Fuel Gas Co.'s Taylor 5096, 7.8 gas, 5425 ft.
Godfrey Cabot's Pritt 1, 0.66 gas, 4946 ft.
Lewis County—South Penn's Tierney 11, 4 bbls, 2595 ft.
Lincoln County—So. Penn's Stephenson 4, 0.51 gas, 1923 ft.
Monongalia County—Mfgrs. Lt. & Heat Co.'s Tennant 3551, abnd 3456 ft.
Putnam County—Chas. Gas Co.'s Johnson 3, 0.13 gas, 2343 ft.
Taylor County—Hope Nat. Gas Co.'s Payne 8622, 0.15 gas, 1750 ft.
Tyler County—Neeley Oil & Gas Co.'s Marten 1, 0.23 gas, 1717 ft.

OLD WELLS DRILLED DEEPER

Braxton County—Pitts. & W. Va. Gas Co.'s Bourn 7525, abnd, deepened from 1899 to 1961 ft.
Wetzel County—Hope Natural Gas Co.'s Barr 3731, 0.1 gas, 3133 ft.

Letters to the Editor

DEAR SIR:

Your exchange of letters with Nelson's office reference scrap drive:

I think it would be worth while, and I wish you would comment on the following:

My observation for many years while visiting many farms and ranches is this: The scrap-iron drive by junk dealers for Japan a few years ago took most of the scrap from junk yards and easily accessible iron around the towns, but did not touch farms, and my opinion is from recent observations, there remains on farms, including each tenant farm house, from 100 pounds to several tons of scrap iron, which has been accumulating over a period of probably 50 or 75 years. From the beginning of the purchase of farm machinery it has accumulated; it does not burn up, wash away, completely rust away, but is there, scattered around, on every farm and ranch in the U. S. The proper program of collecting it would no doubt furnish more scrap than the U. S. could ever possibly use.

Then too, what about the fabricated steel over the old style bridges? I understand from an engineer that this is excess baggage anyway, but I could be mistaken about this. On a 60-mile drive I cross 7 bridges with the fabricated steel over them. This certainly should be investigated, certainly before resorting to taking our "ornaments" you refer to. If this iron is not needed on these bridges, or even if they could be reinforced, or in some way made satisfactory after removing it in event it is needed this would produce an alarming amount of scrap iron. All the iron that was ever produced is still here, and that not in use could easily be recovered.

Also I find that most all old second-hand tires, during last 30 years, are bought by farmers who use them as long as possible, then throw them aside. A dealer in a medium sized town tells me probably 80 percent of the second-hand tires he has traded in and sold during last 20 years, were bought by farmer boys. I stopped at a farm last week, saw 5 old blown out tires being used for flower beds, and some cut and used for water troughs for chickens. I asked why they did not turn them in, and he said he had been thinking about it. Later I saw the same condition on several other farms. I think you will find the scrap iron on farms and bridges, and scrap rubber on the farms. Just take a day off some time and drive around the farms, and you will see for yourself.

J. L. BRYAN,
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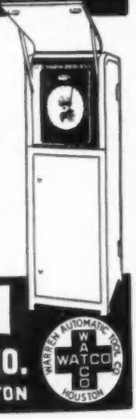
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Men in the Industry's News

JAMES C. RICHDALE of Melrose, Massachusetts, vice president of Colonial Beacon Oil Company, has been appointed consultant to the Office of Defense Transportation on matters relating to liquid fuel supply for the New England area. He was New England manager for The Atlantic Refining Company from 1914 to 1919, and president of the New England Oil Men's Association in 1922. He joined Colonial Beacon in 1928 and became vice president of the company in 1936. He is chairman of the New England Liquid Fuel Administrators' Conference, and a director and member of the executive committee of the New England Council.

W. T. HUDSON has returned from Bogota, Colombia, where he was engaged for three years in oil work. He is now stationed at 4308 Overhill Drive, Dallas, Texas.

ELMER PATMAN has been named chief enforcement officer of the Oil and Gas Division, the Texas Railroad Commission announced last week. He is 34 years old and has been employed by the commission since November, 1941. After attending Georgetown University and National University at Washington, D. C., Patman received his law degree in 1933. He then went to Portland, Oregon, where he was in charge of the comptroller's office, Agricultural Adjustment Administration, Department of Agriculture. In 1936 he returned to Linden, Texas, where he engaged in the practice of law.

A. H. FLAHERTY, 56, an official of Krupp-Flaherty Oil Corporation and a veteran drilling contractor, died July 17 at Midland, Texas, after a long illness.

W. L. JAMES, chief purchasing agent, Stanolind Oil & Gas Company, has returned to Tulsa after serving with WPB in Washington since last September.

THOMAS BROWNFIELD, liaison officer, The Carter Oil Company and Standard Oil Company of New Jersey, has been engaged in a short survey of the Mid-Continent.

W. H. STUEVE, head of the petroleum industry sales division, Oklahoma Gas & Electric Company, Oklahoma City, and president of Oklahoma City Engineers Club, is leaving for Little Rock to assume the duties of consultant on War Emergency Pipe Line, Inc.

J. K. BAUMEL has been appointed director of production of the Texas Railroad Commission, to succeed W. Clinton Owsley who was named to the post vacated by Dr. F. V. L. Patten, chief supervisor of oil and gas.

Baumel is 31 years old. He graduated from the University of Texas in 1937 as a chemical engineer and has done graduate work in petroleum engineering. Upon his graduation he went to work for the Texas Railroad Commission as junior chemical and petroleum engineer. In September, 1939, he was promoted to senior engineer and assistant director of production, becoming chief enforcement officer of the oil and gas division in January, 1942. For the past several months Baumel has presided over hearings involving field problems.

R. S. BONSIB, chief of the safety division, Standard Oil Company (N. J.), New York City, is on an inspection tour of the upper Mid-Continent area.

W. A. GORMAN has been appointed Texas manager of Royal Oil & Gas Corporation, with headquarters at Houston. He formerly was a geologist with Pan American Production Company.

McCLELLAN G. DINGS, formerly geologist with Pan American Production Company, Houston, has joined the United States Geological Survey at Boise, Idaho.

HARLEY T. PRICE has been made a direct factory representative in Mid-Continent fields for Murphy Diesel Company, Milwaukee, to give full sales and engineering assistance on diesel engine applications. His headquarters are 412 West Fourth Street, Tulsa.

A. W. HERRINGTON, president of the Society of Automotive Engineers, technical advisor to Col. Louis A. Johnson on the recent American Economic Mission to India, and president of The Marmon-Herrington Company of Indianapolis, Indiana, has been elected to serve for three years as a director of the American Society of Military Engineers.

Herrington is an expert on military transport, and is the designer of many military vehicles now in the service of the United Nations on all the major battle fronts of Europe and Asia.

WORTHING H. STONE has been appointed assistant advertising manager and is to be in charge of advertising for railroad, farm implement, automotive and rock bit divisions of Timken Roller Bearing Company, Canton, Ohio, Roland P. Kelley, director of advertising and sales promotion, has announced. S. L. Huffman, member of advertising staff for several years, has been advanced to manager of news bureau in addition to continuing his duties of handling advertising of steel and tube division. Peter C. Poss continues his present activities as assistant advertising manager, supervising the buying of publication space and printing.

R. B. McLAUGHLIN, associate director of transportation, has left OPC to return to his former position as vice president of the Texas Pipe Line Company and Texas-New Mexico Pipe Line Company, a step made necessary by the fact that B. E. Hull, president of the two companies, now is devoting himself to the building of the big-inch line.

McLaughlin was a key man in the pipe-line relocation program and the development of the studies which led to

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WPB approval of the first leg of the "big-inch" line. He will be succeeded by W. C. Kinsolving of Beaumont, formerly general and operating superintendent of Sun Pipe Line Company-Yount-Lee Pipe Line Company system out of East Texas to the Gulf Coast, who will have the title of assistant director. Kinsolving has been in the pipe-line business since 1923 and was chief engineer in charge of design and construction of one of the first gasoline lines built, the Sun-Susquehanna.

ALAN MAGEE SCAIFE, director and member of the finance committee of Gulf Oil Corporation, has been elected a vice president of the company. Scaife, former president of the Scaife Company and former chairman of Pittsburgh Coal Company, is a director of these companies.

BENJAMIN ALVARADO, assistant chief of the Colombian Ministry of Mines and Petroleum, has been named chief of the national geological survey in Colombia.

J. P. McCULLOCH, assistant to the manager of foreign production department of The Texas Company, has returned to New York after a survey of company operations in Venezuela and Colombia.

W. G. CORWIN, vice president of Colombian Petroleum Company, has returned to the New York offices after inspecting operations on the company's Barco concession in Colombia.

GENERAL JULIO HORTA BARBOSA, president of the National Petroleum Council of Brazil, was in New York last week preparing to tour oil fields and refineries of the United States. Following an inspection of the Bayway, New Jersey, refinery of Standard Oil Company (New Jersey), he was scheduled to devote several weeks to his tour and later return to New York. While in this country Barbosa will discuss the petroleum products supply situation of South American countries with Washington officials.

CLINTON W. OWSLEY has been named chief supervisor of oil and gas by the Texas Railroad Commission. Owsley will succeed F. V. L. Patten who resigned to work for the OPC. For more than a year Owsley has been director of production for the Commission and prior to that time he was employed as assistant director of the Gas Utilities Division. Owsley has had long experience in Railroad Commission work, especially in accounting.

FRANK H. SCHOUTEN, Fort Worth division geologist for Stanolind Oil & Gas Company, has been transferred to Tulsa to take charge of geophysical operations, and will be succeeded by F. J. Schempf, West Texas district geologist the past three years. Dave Henderson, Panhandle district geologist, succeeds Schempf, and the former will be relieved by W. G. Moxey, member of the West Texas staff at Midland.

OSCAR R. BURDEN, Panhandle Refining Company, Wichita Falls, has joined the War Emergency Pipe Line, Inc.'s operating staff at Little Rock as assistant to the general manager. He was North Texas division superintendent for the Texas Pipe Line Company for many years prior to April, 1940.

ROBERT G. GOUGH, Fort Worth division petroleum engineer for Continental Oil Company, has been transferred to Borger as Texas Panhandle district superintendent, relieving W. E. Beyhan, who has been assigned to special duties.

Squeaks from the Bull Wheel

Fight in Peace

During the last war, a henpecked husband managed to evade his wife long enough to get into the Army. In this case, however, absence did not make the heart grow fonder; the wife continued to heckle him with a long series of letters, each one filled with advice, admonition, complaints and criticism. Then his outfit was moved to France. Feeling a greater safety in distance, the soldier looked over a dozen or more unanswered screeds, and in a burst of bravery worthy of a better cause, he sat himself down to answer all at once.

"Dear Lettie," he wrote, "don't send me no more naggin' letters. They don't do no good. I'm 3000 miles away from home, and I want to fight this war in peace."

Eliminated

One day an old negro down in the town of John Sharp Williams did the former Democratic leader of the House a very welcome service, and Williams wanted to reward him.

"Uncle, which shall I give you—a ton of coal or a bottle of whiskey?"

"Foh de Lo'd's sake, Massa John, you shorely knows I buhn wood."

Only Once

"Me brudder slapped Al Capone."

"Yeah? I'd sure like to meet him."

"Aw, I don't wanna dig him up fer dat."

Has Half

"I just adore lying in bed mornings and ringing for my valet."

"My goodness, have you a valet?"

"No, but I have a bell."

Tiresome

"And that habit of talking to yourself —that's really nothing to worry about."

"Perhaps not. But I'm such a bore!"

Handy Tool

"How did you like those Chinese backscratchers I gave you?"

"Is that what they are? My wife's been making me eat salad with them."

Putting It Plain

"The only difference between you and a horse is that a horse wears a collar."

"But I wear a collar, too."

"Then I was wrong, there isn't any difference at all."

Home Atmosphere

Sergeant: "Stand up straight, throw those shoulders back, and button up your coat."

Married Draftee (absent mindedly): "Yes, dear."

Definition

"Dad, tell me, what does bankruptcy mean?"

"Bankruptcy, my boy, is when you put your money in your hip pocket and let your creditors take your coat."

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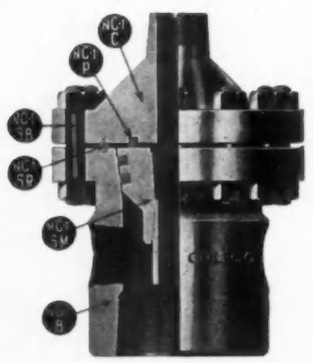

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STATEMENT OF CONDITION AT THE CLOSE OF BUSINESS, TUESDAY, JUNE 30, 1942

RESOURCES		LIABILITIES		
Cash and Due from Banks	$65,916,420.20	Deposits		$170,014,655.05
U. S. Government Obligations, Direct and Fully Guaranteed	55,877,942.40	Acceptances Account of Customers and Letters of Credit		704,316.96
State, County and Other Public Bonds	9,765,501.32	Dividend Declared, Payable July 1, 1942		84,000.00
Other Bonds and Securities	847,696.53	Accrued Interest, Expenses and Reserves		299,653.34
Loans, Discounts and Acceptances	44,317,006.55	Capital	$2,800,000.00	
Customers' Liability Account of Acceptances and Letters of Credit	586,076.70	Surplus	7,200,000.00	
Stock of Federal Reserve Bank	255,000.00	Undivided Profits	1,398,024.98	
Accrued Income Receivable and Prepaid Expenses	360,312.25	Reserve for Dividend not Declared	168,000.00	11,566,024.98
Banking House, Furniture and Fixtures	3,297,603.50			
Branch Banking Houses	861,570.58			
Other Real Estate	583,520.30			
TOTAL	$182,668,650.33	TOTAL		$182,668,650.33

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For wartime emergency-breaks in pipe lines, this Doublex Simplex Split Sleeve will enable you to make quick, economical, effective repairs. You should have a supply of several of each different size that you might need. Thousands in use, some for 13 years. Order now from shipping point nearest you as follows: Birmingham, Dallas, Kansas City, Los Angeles, Minneapolis, San Francisco, Pittsburgh.

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Then, and may it be soon, the war-sharpened skill of Butler craftsmen will bring even better Butler equipment—ahead of the field in strength, durability and in erecting, cutting down and re-erecting advantages. Then, augmented Butler factory facilities will swing full capacity to the tremendous, world-wide oil field reconstruction job.

In the meantime, American producers are faced with the difficult job of making their old equipment supply more and more of the world's oil needs. Butler field offices and representatives remain at your service to help you get the job done.

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Factories: Kansas City, Mo., Galesburg, Ill., Minneapolis, Minn.

Field Offices: Butler Manufacturing Company of Louisiana, 401 Hamilton Road, Bossier City, Louisiana, Box 281, Shreveport, La. (Mail)

Butler Manufacturing Company of Texas, 3113 Leeland Ave., Houston, Texas.

Export Office: 8 South Michigan Avenue, Chicago, Illinois.

For prompt handling, address all inquiries to 1246 Eastern Avenue, Kansas City, Mo.—946 Sixth Avenue, S. E., Minneapolis, Minn.

Notes for the Equipment Buyer and User

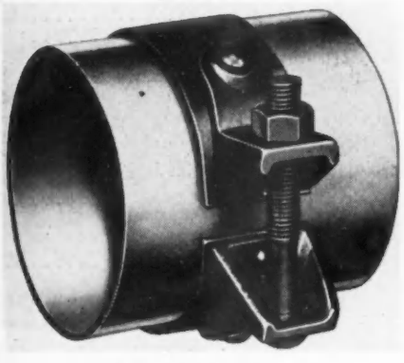
Pipe Clamp

DRESSER MANUFACTURING COMPANY

Dresser Manufacturing Company, Bradford, Pennsylvania, has announced a new product to its regular line of repair devices, style 77A band clamp, for repair of small pin holes, leaks, and splits in straight runs of pipe.

This new clamp is claimed to be one of the most useful and handy items now available for such repair work. Simple in construction, easy and fast to apply, it prevents further damage and loss of line contents where small defects in the line occur.

Style 77A band clamp is made up of a heavy, one-piece steel band of circular, split construction, with a riveted bolt lug at each end. A track-head bolt pulls the ends securely. To install, the clamp is sprung apart until it can be slipped around the pipe and over the gasket or packing; then it is bolted up to make a firm, leak-proof repair. A special cone gasket (furnished when specified) has two molded rubber tabs which aid in positioning the gasket over the pin hole or leak.



Dresser Band Clamp

An unusual range of sizes is offered. This includes all standard pipe sizes from 1-inch I.D. to 26-inch O.D. Also cast-iron pipe and special sizes. Band widths of 2, 3, 4, and 6 inches may be had. Band thicknesses are 1/16, 3/32 and 1/8 inch.

Rig

CARDWELL MANUFACTURING COMPANY

Cardwell Manufacturing Company, Wichita, Kansas, has announced double-drum hoists powered by Caterpillar tractors for well servicing, rotary and cable-tool workover jobs for drilling.

Three standard units: a Cardwell double drum hoist, Caterpillar diesel tractor and an Athey forged-trak trailer are combined to make this a fast operating rig that can be moved anywhere. The standard Cardwell hoist is designed so that an engine may be added at any time in the field as a power plant in place of the tractor.

The double-drum hoist is driven from the rear power take-off of the Caterpillar tractor through a V-belt drive to the standard transmission. Friction clutches on the countershaft transmit the power directly to the drums and

Cardwell Rig

may be engaged or disengaged quickly or slowly as the job demands, saving time at each operation and absorbing the shock load of each engagement.

The standard Cardwell hoist is arranged so that rotary table drive or spudding assembly may be installed in the field at a later date. The spudding assembly is interchangeable in the field with the rotary assembly in three to four hours. The rotary-table drive is operated by a friction clutch which is equipped with an automatic brake to stop rotation of the table.

The new Cardwell dual safety braking system assures positive, easy-action brakes at all times. Brakes have single adjustment and are fully equalized, yet either brake will operate independently and hold the load should the other be damaged.

Single leg 48- or 55-foot or double leg 55-foot telescoping servicing masts and 65-foot double leg telescoping drilling masts are available.

Cook Joins McCullough In Charge of Sales

R. M. Cook, formerly vice president of International Cementers, Inc., has joined McCullough Tool Company in charge of sales. Cook's activities have

R. M. COOK

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taken him into practically every active drilling and producing area for many years. He started in the oil tool business in the early days of the development of the Coalinga area, and was subsequently connected with Byron Jackson Company and Pacific Cementing Company.

While he will make his headquarters at Los Angeles he will spend much of his time in the districts served by the 16 McCullough branch offices.

Gas Pressure Control

The Bristol Company, Waterbury, Connecticut, has published a 12-page data folder on the application of telemetering to the measurement of gas distribution pressures. The data sheet, No. 39, contains information concerning remote pressure measurement and remote automatic pressure control and gives information concerning a number of typical installations with sketches to show method of use.

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